NanoSafety Cluster Newsletter

www.nanosafetycluster.eu Issue 12: Summer 2018

Welcome to the NSC Newsletter for Summer 2018

For those of you who have managed to tear yourselves away from the World Cup, Wimbledon, BBQs and all things non-nano or nano-related to download this latest NanoSafety Cluster Newsletter—it's a big one! Your contributions have made this one of the most 'newsy' issues so far (since records began). For this reason, you've find the contents on the next page

What's in store?

In our first section (NSC News) Prof. Iseult Lynch has flagged up the need for all projects to update the NSC Compendium of Projects which will be launched later this year at our biennial event—the **Nanosafety Forum for Young Researchers**, which takes place in Malta in September under the aegis of ACEnano. You'll find more information about the Forum within the ACEnano profile on pages 14 & 15— this is a a not-to-be-missed event for any young scientist in this field.

The NSC Compendium documents the status of important EU-funded projects on nanomaterial toxicity and exposure assessment and risk management, with increasing focus on safety-by-design considerations for nanomaterials, predictive toxicology approaches and high throughput / Tox21 type approaches. It also showcases the exciting and important European-wide collaborative research being undertaken to ensure the safe implementation of nanotechnologies, and to act as a one-stop-shop for all stakeholders interested in acquiring an overview of current research activities. Finally, the compendium aims to bring the research community closer together and show the potential for synergy, so make sure your project is fully represented.

This issue continues with a special feature from the NanoCommons project describing how it is exploiting the Scholia platform to link NSC data related to project grants, funders, participating institutes, and research topics. As a use-case study, the NSC is revealing the enormous potential of this public knowledge base.

Our section on NSC Project News begins with a focus on the NanoFASE project's recent activities at SETAC Europe, its highly successful stakeholder consultation event and the video production of the Mesocosm Experiments. Meanwhile, caLIBRAte has produced informative webinars related to Risk Governance models, available from its website.

The PATROLS project raises its profile quite significantly in this edition as it reports from Chemspec Europe as well as a joint PATROLS—GRACIOUS—NSC event on the harmonisation of SoPs. We then report on the NanoMONITOR 3rd Stakeholders' Day; and a NanoStreeM and caLIBRAte Workshop—Governance of emerging nano-risk in semiconductor industry before our Special Feature – 1st International Nanoolympiad: impressions from Iran. Three groups report on their individual experiences at this unique event, made more memorable by the exceptional hospitality of the hosts.

New initiatives profiled here include the H2020 e-Infrastructure project NanoCommons, as well as contactpointnano.ch: a new contact point for start-ups, SMEs and industry that builds a bridge between research and innovative application.

Following this, four recent publications are given a platform. Their coverage includes 'New advances in the hazard and risk assessment of engineered nanomaterials' as well as a critical evaluation of nanopesticides and nanofertilisers.

A section on jobs and research opportunities offers prospects for upcoming PhD candidates, Proposal Writers and Lab Managers— as well as fixed term and permanent posts.

Our final section—Events—has been subdivided into workshops and conferences for this issue. Look out for deadlines for early bird registrations and abstract submissions—the deadline for nanoSAFE 2018 is imminent.

We hope you enjoy browsing through and reading the articles in this issue—and thank you again for your invaluable support.

On behalf of NSC WG Dissemination, all that remains to say is have a great summer and happy holidays.

Kind regards
Lesley Tobin
news@nanosafetycluster.eu

WG Dissemination

Contribute to the NSC Newsletter here:
http://www.nanosafetycluster.eu/news/submit-news.html

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Preparation for the 2018 Nanosafety Cluster Compendium of projects

Call for contributions

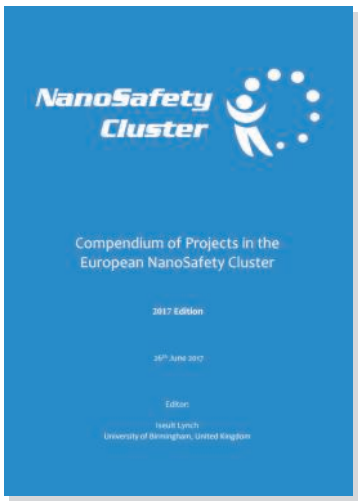
H2020 projects related to Nanosafety, both directly involved in the EU NanoSafety Cluster or with a nanosafety component, are invited to contribute to the **2018 Edition of the Nanosafety Cluster Compendium of projects**. National nanosafety projects are also very welcome, and indeed strongly encouraged, to contribute.

The 2018 Edition of the Nanosafety Cluster Compendium of projects will be launched in Malta on **11th September 2018** as part of the **Nanosafety Forum for Young Researchers**, very many of whom are the core of the EU H2020 nanosafety projects, contributing their time, energy and skills to ensuring the highest quality of data and modelling work is performed.

To achieve this, projects are asked to download the 2018 templates (new project, running project, ended project for those interested to provide an update on post-project impacts) from the Nanosafety Cluster website, and to send their contributions to eunanosafetycluster@gmail.com by **Friday 7th September** please, or earlier if possible.

Working groups and task forces are also invited to include an update on their activities, and again templates are available from the NSC website.

For those not sure how much detail to include or new to the compendium, the link below can also be used to view the 2017 Edition of the EU NanoSafety Cluster Compendium, which contains information on all 17 running H2020 projects as well as the last of the FP7 projects (which finished in December 2017) and several recently completed FP7 projects who provided updates.



Information on older projects can be found in the previous editions of the Compendium.

Is your project listed here?
If not, email info@nanosafetycluster.eu

- **Horizon 2020 Projects**
  - Ongoing Projects:
    - ACEnano
    - Calibrate
    - CERASAFE
    - EC4SafeNano
    - GRACIOUS
    - Hisents
    - Lorcenis
    - ModCOMP
    - NanoFARM
    - NanoFASE
    - NanoGenTools
    - NanoREG II
    - NanoStreeM
    - Necomada
    - npSCOPE
    - PATROLS
    - Pandora
    - SKHINCAP
    - SmartNanoTox
  - Completed Projects:
    - ProSAFE
- Seventh Framework Programme Projects
- Sixth Framework Programme Projects
- LIFE Programme
  - NanoMONITOR
  - SIRENA
- **National Projects**
  - DaNa(2.0)
  - EURO-NanoTox
  - NanEAU
  - NANOFILM
  - NANOKEM
  - NANOPLAST
  - Progetto
  - SIDANO

The EU NanoSafety Cluster as Linked Data visualized with Scholia

Paper posted on 02.07.2018, 19:26 by Egon Willighagen, Najko Jahn, Daniel Mietchen
DOI: 10.6084/m9.figshare.6727931
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DOI: 10.6084/m9.figshare.6727931
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Abstract

At a recent hackathon organized by the European Research Council, GeneWiki, and others, a group of 25 researchers came together in Berlin to work on ontologically modelling research grants in Wikidata. During this meeting the EU NanoSafety Cluster was used as use case study, resulting in new linked data around the cluster. The Scholia platform was extended with a Project aspect, more than 40 projects have been added to Wikidata, and almost 500 journal articles associated with their project. The result can be viewed at tools.wmflabs.org/scholia/project/Q27949537.

Introduction

One of the goals of the EU NanoSafety Cluster (NSC, www.nanosafetycluster.eu) is to maximise the synergy between the EU-funded projects that participate in the cluster. As such, sufficient interactions and exchange of knowledge between the projects are required. Of course, a common language and data exchange infrastructures are being developed [1,2], but the infrastructure is also about getting researchers together.

Research outputs, like journal articles, datasets, standard operating procedures, models, software, etc, from the various projects should be shared, but also be easy to find. FAIR and Open Data are therefore essential components of the European Commission H2020 and FP9 (Horizon Europe) research funding frameworks, generally referred to as Open Science [3]. A collection of research articles resulting from NSC projects up to 2016 was recently made available as a ScienceOpen collection [4]. Obviously, we need a powerful platform if we also want to integrate information about NSC project grants, funders, participating institutes, and research topics. For that we need a linked data platform.

We present here some of the outcomes of a recent hackathon organized by the European Research Council (ERC), GeneWiki, and others [5]. The goal of this meeting was to model grant information and see how this can be used in the Wikidata platform for linked data (www.wikidata.org) (see e.g. [6]). The NSC was proposed as a use case [7], which several participants worked on during the event, including the authors of this write up. Scholia, Wikidata, and project Scholia was introduced recently as a graphical interface around Wikidata, combining information from multiple entries in the database, with a focus on scholarly literature [8]. Scholia has since been used to provide overviews of literature, e.g. literature about the Zika virus [9]. Scholia organizes views on data from Wikidata into so-called aspects. Existing aspects include work, venue, author, topic, and organization among a number of others. In relation to the Berlin workshop, we developed a new Project aspect, which visualizes various bits of information about projects, such as a map of participating institutions (see Figure 1): tools.wmflabs.org/scholia/project.

Figure 1: Map of institutes participating in NSC projects. It is currently incomplete because Wikidata currently does not list all participants for all projects, and for many projects only the coordinating institute.

Project information in Wikidata

During the hackathon (see also Wikidata:WikiProject Research projects), a number of Wikidata items were created for projects participating in the NSC, using grant information from the EC CORDIS database. A list of FP7 and H2020 projects was retrieved from the NSC website and merged with data from CORDIS, a central online databases about projects funded by the European Commission. OpenRefine's WIkidata reconciliation tool (www.wikidata.org/wiki/Wikidata:Tools/OpenRefine) was used to upload data about the NSC projects to Wikidata in case they were not available, yet. Furthermore, OpenAIRE REST API (api.openaire.eu) was used to obtain links between items for projects and items for journal articles indexed in PubMed. The relationships between grants and publications were represented according to the QuickStatement syntax (see www.wikidata.org/wiki/Help:QuickStatement), a popular tool for uploading data to Wikidata. This combination allows Scholia to present a timeline of NSC projects and research outputs, as depicted in Figure 2.

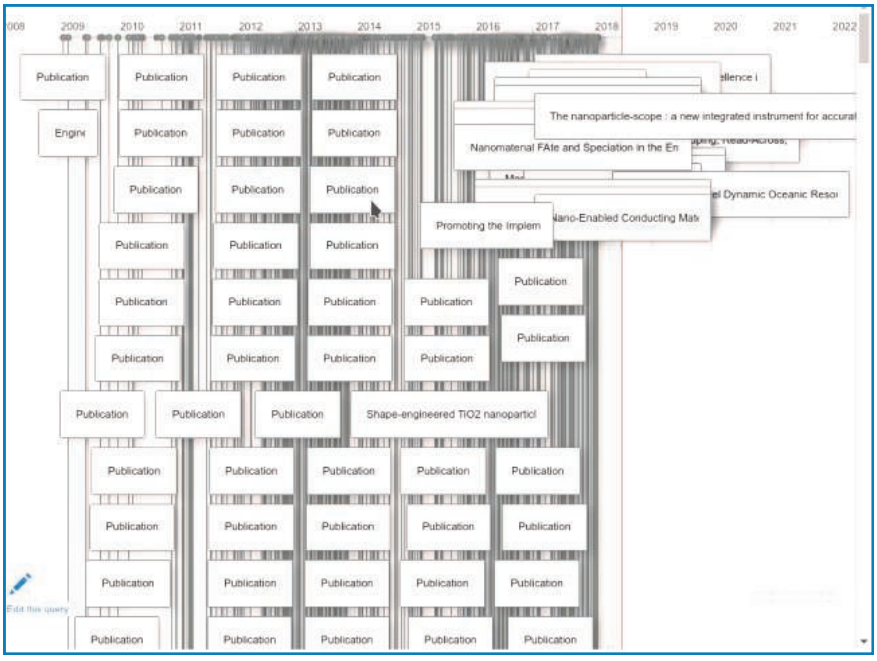

Figure 2: Timeline of NSC projects and research output of those projects.

This new Scholia Project aspect also lists the literature in other ways, including a table listing more than 450 articles. This list is smaller than the ScienceOpen collection which was compiled and curated by an expert by searching OpenAIRE, Google Scholar, and other sources using the individual project short names and Grant Agreement numbers [4], but also covers literature from 2017 and 2018, which the ScienceOpen collection did not at the time of writing (see Figure 3).

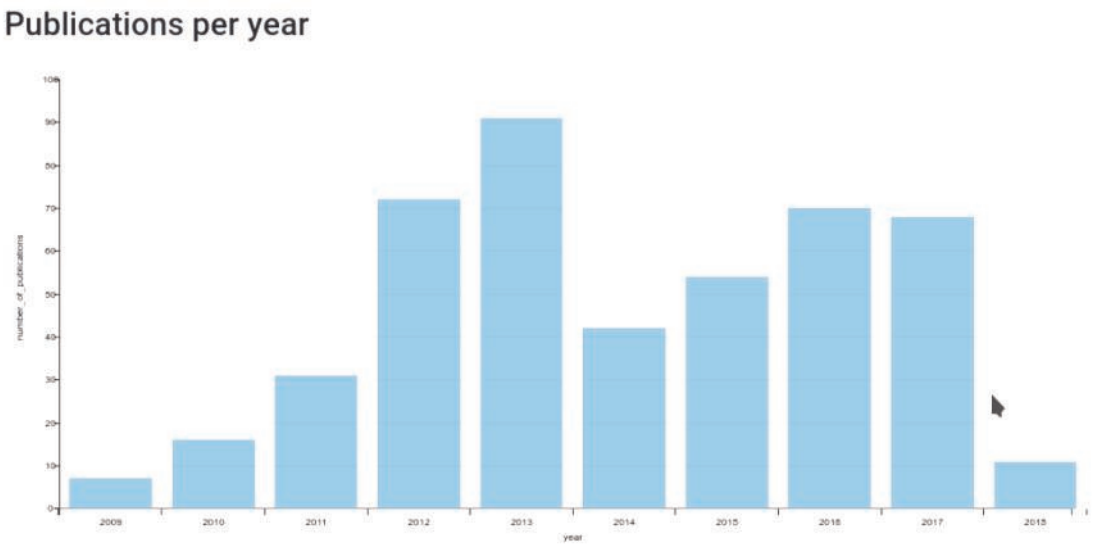

Figure 3: The Scholia Project aspect for the NSC features a bar diagram showing the number of research outputs (mostly journal articles) over time, including recent literature.

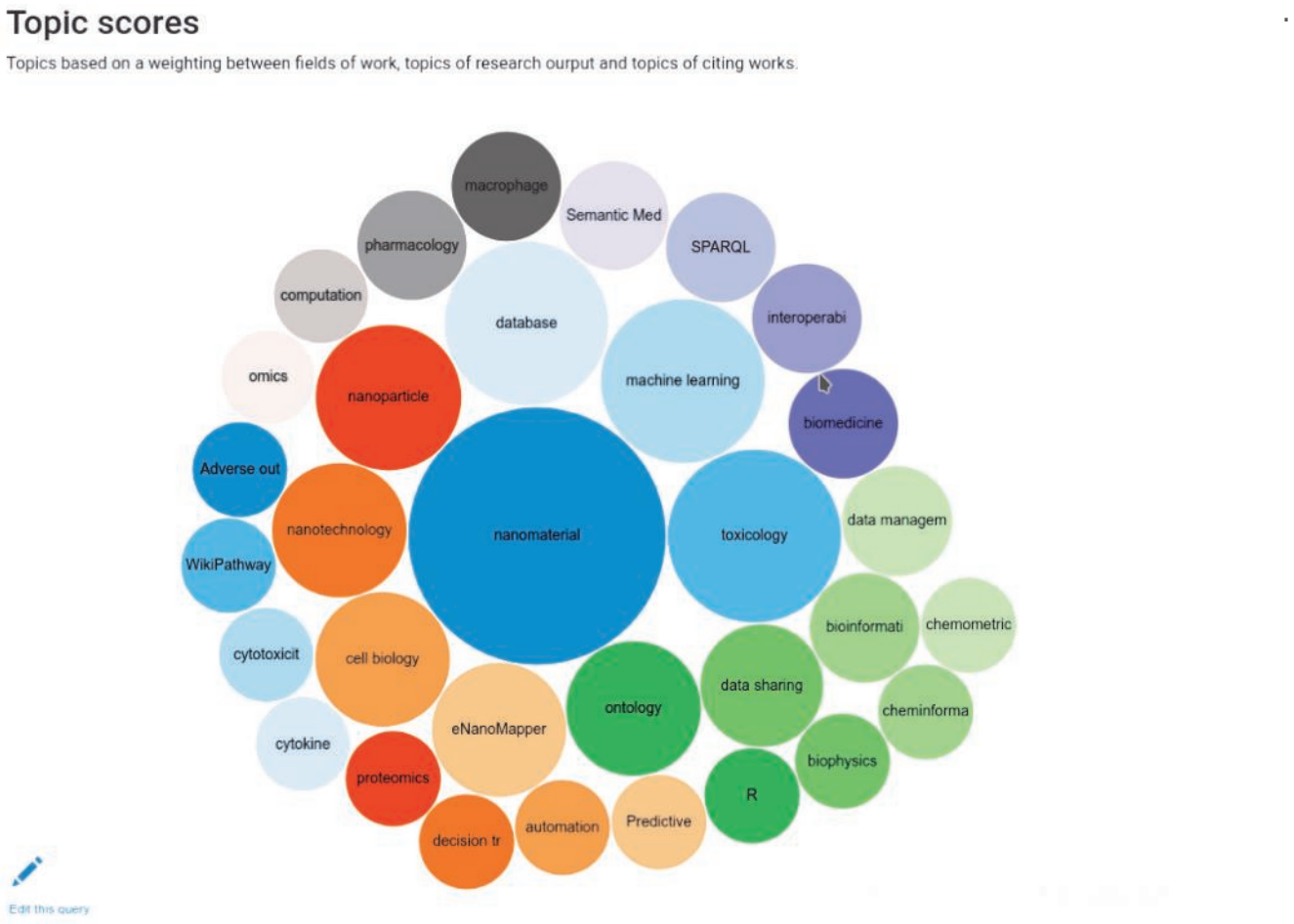

Figure 4: Topics associated with articles published by the eNanoMapper project.

Of course, the Project aspect of Scholia can also be used for individual projects. For example, Figure 4 shows the topics related to articles funded by the eNanoMapper project. Importantly, this topics overview only works if articles are annotated with *main subject* information in Wikidata.

Discussion and Conclusion

While Wikidata now better covers the activities and results of the NSC, the effort is not complete yet. For example, not all EC grants are available in Wikidata yet, and not all project partners are connected to projects. In this respect, other results of the Berlin hackathon concerning grants and projects data, and data modelling will be presented in other venues and soon available. However, the Scholia system will become increasingly informative as more data get linked, which anyone with a Wikidata account can do, and everyone in the NSC cluster is invited to contribute to.

Particularly, Wikidata and Scholia allow annotation of research articles with their "main subject", as was done for Zika [9]. Similarly, it would be nice to have NSC cluster articles annotated with the nanomaterials they study. This is particularly interesting for those articles that describe JRC representative industrial nanomaterials [10], which are already in Wikidata: tools.wmflabs.org/scholia/chemical-class/Q47461491 (see Figure 5) [11].

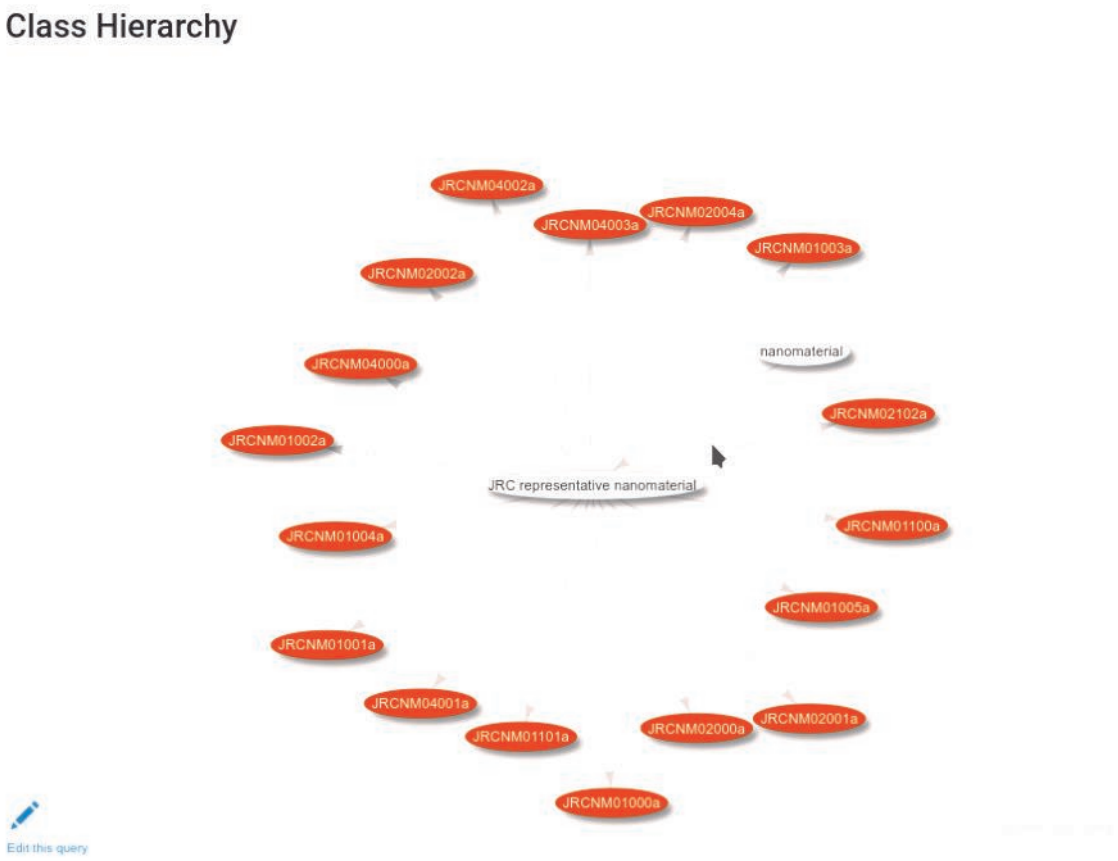

Figure 5: JRC representative nanomaterials found in Wikidata.

But while the data can be more complete, it nicely shows how a public knowledge base can be used to support European nanosafety research. The power is of having information about our NSC as linked data is only limited with the data we made available. Using custom search queries we can extract all sorts of information from the system. Just to give some idea, follow this link to get a list of all publications funded by at least two NSC projects.

Acknowledgments

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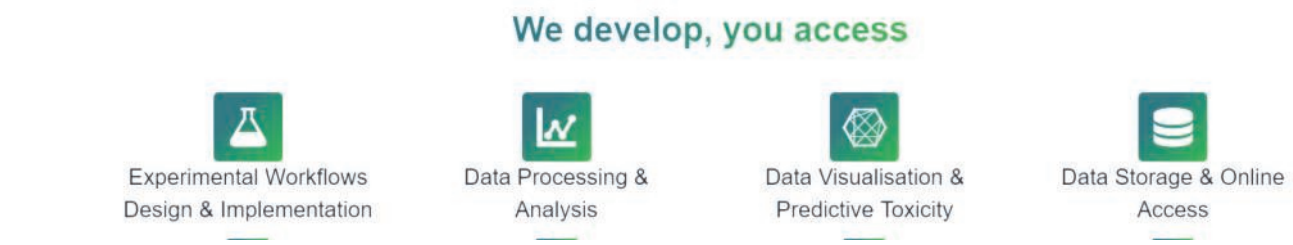
What is NanoCommons

Read-across approaches, which are currently absent for NMs, in large part as a result of data fragmentation and inaccessibility, would reduce the cost of nanosafety research and regulation dramatically by removing the need for extensive laboratory and animal testing.

The availability of a nanosafety knowledge infrastructure, that organises and visualises data and data relationships, makes it accessible, integrates computational tools for risk assessment and decision support, enables their validation and facilitates the necessary grouping will be a critical factor in reducing regulatory costs.

The H2020 Infrastructures project, NanoCommons, addresses this gap by creating a community framework and infrastructure for reproducible science, and in particular for *in silico* workflows for nanomaterials safety assessment and beyond, by:

1. integration and federation of existing NMs characterisation and interaction mechanisms knowledge, protocols and data (beyond simple toxicity), along with quality assurance criteria and underpinning ontologies
2. compilation and development of a user-friendly interface for a suite of computational tools for mechanistic and statistical modelling, read-across, grouping, safe-by-design and life cycle assessment, and bench-marking of their predictive power; and
3. provision of (typically remote) access to its KnowledgeBase, modelling toolbox (predictive, grouping, risk assessment) and workflow optimisation, and the supporting expertise, to the broader user community.



Focus on NanoFASE

NanoFASE participation in SETAC Rome

Fate and Exposure models for you - www.nanofase.eu

SETAC Europe 28th Annual Meeting,
May 13-17, 2018

NanoFASE took the road to Rome for the 28th annual meeting of SETAC Europe, presenting papers and posters, chairing sessions and offering a workshop.

For Claus Svendsen, NanoFASE project coordinator, "The SETAC conference is one of the most important opportunities in the year to talk with our peers and end users whose work could be impacted by NanoFASE fate and exposure models. It was really encouraging to see the positive and engaged reactions to our partners – particularly our Young Scientists – presenting their NanoFASE work. We were proud to chair the SETAC Nanotechnology Interest Group meeting that provided plenty of feedback on directions taken in the field."

"I'm especially thankful to our many stakeholders who gave us their time at the NanoFASE hands-on consultation event , from which we got really useful guidance" for the continuing development of our clickable Exposure Assessment Framework. This already rich online resource will be significantly extended and remodelled by autumn 2018, and a webinar organized to obtain industry stakeholder views.

'The Environment as a Reactor Determining Fate and Toxicity of Nanomaterials' was a double platform session chaired by NanoFASE partners. The open call gathered a dozen high-quality presentations (read abstracts online at SETAC: part I and part II) including six from NanoFASE (see titles at www.nanofase.eu/news).

1. Nathaniel Clark et al. (UoP) "Development of a rapid screen to assess bioaccumulation potential: from ex vivo to in vivo using pristine and aged nanomaterials in fish"
2. Patricia Silva et al. (UAVR) "Uptake and elimination kinetics of pristine and aged silver nanoparticles in freshwater benthic organisms"
3. Helen Walch et al. (UNIVIE) "Tackling nanoparticle fate assessment in surface waters - heteroaggregation as a key process"
4. Marta Baccaro et al. (WU) "Mobilisation of silver sulphide nanoparticles in soil column by earthworms´ bioturbation"
5. Karin Norrfors et al. (SLU) "Determination of attachment efficiency for ENPs in different types of soils by saturated column experiments"
6. Jonas Wielinski et al. (EAWAG) "The transformation of copper and zinc (-nanoparticles) during sewage sludge combustion"

With, in addition, five poster presentations:

1. C. "Kees" van Gestel et al (VU-VMC) "Influence of soil type on the toxicokinetics of Ag and Ag2S nanoparticles and ionic Ag in soil invertebrates"
2. Anita Jemec Kokalj et al. (Uni-Lj) "Terrestrial isopods as models to assess the biotransformation of nanoparticles inside the organisms: an example with silver and gold nanoparticles"
3. Carolin Schultz et al. (NERC) "Assessment of the differential effects of transformation on the toxicity of nanomaterials with different size and coating properties to soil bacteria and the nematode *Caenorhabditis elegans*"
4. Amaia Green-Extabe et al. (NERC) "The uptake of pristine and aged silver nanoparticles by wheat, *Triticum aestivum*, in a soil exposure"
5. Alex Gogos et al. (EAWAG) "Influence of organic compounds on the sulfidation kinetics of copper oxide nanoparticles".

ROME 2018
SETAC EUROPE 28th ANNUAL MEETING
13–17 MAY 2018 I ROME, ITALY
Responsible and Innovative Research for Environmental Quality

.../cntd Focus on NanoFASE

Image: NanoFASE Scientist Susana Loureiro (UoA) chaired the SETAC Rome session "The Environment as a Reactor Determining Fate and Toxicity of Nanomaterials" with Iseult Lynch (UoB), Cornelis A.M van Gestel (Vu) and Claus Svendsen (NERC). Here, Karin Norrfors (SLU) spoke on "Determination of attachment efficiency for ENPs in different types of soils by saturated column experiments" and Patrícia Silva (UoA) on "Uptake and elimination kinetics of pristine and aged silver nanoparticles in freshwater benthic organisms".

The SETAC (Society of Environmental Toxicology and Chemistry) Europe 5-day Rome event featured training, networking and learning opportunities. Attended by approximately 2,500 scientists, risk assessors, regulators and managers from academia, business and government representing 60 countries, SETAC Europe meetings open doors to collaboration on emerging research and give insight on the latest methodologies as well as regulatory developments.

NanoFASE organized a Hands-on Stakeholder Consultation event

at SETAC Rome, May 14, 2018

NanoFASE organized a Hands-on Stakeholder Consultation at SETAC Rome – SETAC Europe 28th Annual Meeting, May 14, 2018. The 2-hour event was a hands-on guided tour for regulatory, academic and consultancy stakeholders presenting the concepts and approaches underpinning the NanoFASE clickable Exposure Assessment Framework – and collecting detailed, cogent user feedback. The participants gave a wealth of advice on improving the communication of our tools. They impressed us with their structural suggestions, and gratified us with their enthusiasm.

NanoFASE's overall aim is to deliver an integrated Exposure Assessment Framework (protocols, models, parameter values, etc.) that:

- Allows all stakeholders to assess the environmental fate of nano releases from industrial nano-enabled products,
- Is acceptable in regulatory registrations and can be integrated into the EUSES model for REACH assessment,
- Allows industry a cost-effective product-to-market process, and
- Delivers the understanding at all levels to support dialogue with public and consumers.

/cntd...

.../cntd Focus on NanoFASE

Image: Claus Svendsen (Coordinator) presented the NanoFASE clickable Exposure Assessment Framework to a range of stakeholder participants (38 delegates from regulatory, academic & consultancy).

NanoFASE scientists Claus Svendsen, Stephen Lofts, Marianne Matzke, Karin Norrfors, Iseult Lynch, Helene Walch, Joris Quik, Samuel Harrison and Susana Loureiro ran the interactive event. By participating in the consultation workshop, the stakeholders got more insight about our NanoFASE Exposure Assessment Framework and with their active participation, valuable comments and suggestions, they helped us tailor the framework to be even more suited to the specific needs in the regulatory, industrial and research sector. Thanks to the stakeholders from all over the world for making this event a great success.

A nano industry focussed webinar will be organized in the week of 22 October to get a say from the industry stakeholders on our Exposure Assessment Framework. **Express your interest here**.

NanoFASE- The Mesocosm Experiments Video is Out!

Watch-Share-Enjoy!

One of the key challenges for the NanoFASE project is linking simple and robust laboratory-based techniques and protocols to what is likely to happen in the complex systems in our environment. NanoFASE bridges this gap with mesocosm experiments that simulate soil and aquatic systems. These mesocosm experiments are labour intensive, requiring multi-disciplinary approaches with the potential to identify important interactions among the nanomaterial, the physical medium be it soil, sediment or water, and the organisms that inhabit those systems.

The University of Aveiro, NanoFASE lead partner for the mesocosm work, have produced a video aimed at a broad audience in which Susana Loureiro explains how and why we have conducted these experiments.

/cntd...

.../cntd Focus on NanoFASE

Strikingly, the video will be inspiring to girls considering STEM careers as many members of the international mesocosms team are women. The NanoFASE video includes incredible close-up photography of different ecological systems and organisms. View "Nanomaterials in Mesocosms" here.

The video was presented at the national annual meeting of Portuguese researchers, "Science Meeting 2018-Encontro Ciência 2018" on 2-4 July, Lisbon, Portugal.

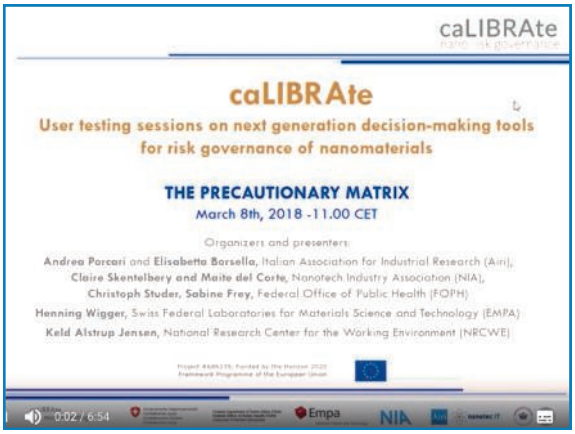
encontro CIÊNCIA '18

ENCONTRO COM A CIÊNCIA E TECNOLOGIA EM PORTUGAL
2-4 JULHO
Centro de Congressos de Lisboa
encontrociencia.pt
#ciencia2018PT

Risk Governance Models Webinars available on caLIBRAte website

caLIBRAte: www.nanocalibrate.eu
Sean Kelly
Nanotechnology Industries Association
sean.kelly@nanotechia.org

The caLIBRAte (www.nanocalibrate.eu) project has been working during the first half of 2018 on testing a number of risk governance models with stakeholders and getting feedback on them. As one of its main goals, caLIBRAte is looking to establish a risk governance framework to allow people to assess and manage human and environmental risks of manufactured nanomaterials (MN) and nano enabled products. An important foundation of the framework will be a number of tested models that can be combined with an understanding of stakeholders' needs to provide a framework that will go beyond existing REACH tools and be available as a system-of-systems that can be used by all stakeholders for risk assessment, prioritisation and the management of risks associated with the production or use of MNs.



An important task within caLIBRAte has been the testing of models with stakeholders both in physical events and through a number of webinars.

The webinars on the following models are now available at http://www.nanocalibrate.eu/risk-governance-models

- Swiss Precautionary Matrix
- SimpleBox4Nano
- StoffenmanagerNano and Licara Nanoscan
- GuideNano

The webinars provide a good introduction to the risk governance tools and how they can be used within an organisation to help manage NM risks. They are especially aimed at industrial stakeholders who have the need of managing risks either as a producer or use of NMs.

Image: caLIBRAte consortium

Spotlight on ACEnano

Pursuing analytical and characterisation excellence in nanomaterial risk assessment:

www.acenano-project.eu
Raquel García
NANOfutures - Prodintec
rgg@prodintec.com
WG7 Dissemination

Nanomaterials are man-made materials of a size thousands of times smaller than the width of a human hair. They have fascinated scientists and industry with their unique and unpredictable properties, which have given rise to an endless variety of new applications in every sector of technology and medicine. As a result, an ever-increasing number of nanomaterials are entering the market in everyday products spanning from healthcare and leisure to electronics, cosmetics and foodstuffs. However, the novelty in exploitable properties may be mirrored by new hazards and, in order to manage these, a well-founded and robust legislative framework that will ensure safe development of nano-enabled products is needed.

The development of such a framework has proven particularly challenging; at the heart of the challenge lies the difficulty in the reliable and reproducible characterisation of nanomaterials given their novelty, variety in properties and forms and dynamic nature, particularly in complex conditions, such as within different biological, environmental and technological compartments.

Image: The ACEnano Consortium

To resolve this, the ACEnano project, coordinated by the University of Birmingham (UK), is working towards introducing confidence, adaptability and clarity into nanomaterial risk assessment by developing a widely implementable and robust tiered approach to nanomaterials physicochemical characterisation that will simplify the choice of characterisation methods, and facilitate contextual (hazard or exposure) description and its transcription into a reliable nanomaterials grouping framework.

http://www.acenano-project.eu/news-events/30-pursuing-analytical-and-characterisation-excellence-in-nanomaterial-risk-assessment

ACEnano sponsors the 3rd NanoSafety Forum for Young Scientists

The **EU NanoSafety Cluster** and the Horizon 2020 **ACEnano** project are proud to announce the 3rd NanoSafety Forum for Young Scientists. The event is a follow-up of the first two meetings, which took place in Syracuse, Sicily and Visby, Sweden.

The 3rd NanoSafety Forum for Young Scientists will take place in **Valletta, Malta on 10th and 11th September 2018**. Keynote speakers are Mark Miller (human toxicology impacts from nanomaterials) and a (pending final confirmation) expert on exposure and ageing of nanomaterials.

32 abstracts were selected for oral presentations, spanning topics from nanomaterials characterisation, environmental fate, screening technologies for nanosafety, human health and standardisation, risk assessment, and data management and modelling. The draft programme will appear very shortly on the conference webpage.

The event is an open forum for young (students, post docs and others) and senior scientists working in EU-funded, national and industrial nanosafety projects. The Forum will also offer everyone the opportunity to network, promote cross-project collaboration, exchange scientific knowledge and learn from each other.

The Forum will consist of both oral and poster presentations, which will allow Young Scientists showcase their work and express fresh ideas. At the same time, keynote talks by experienced experts will also take place, on matters of high scientific interest for the wider NanoSafety community.

Early bird registration (£90) ends on the 15th July, so please don't miss it!

Use this link to register.

The Nanosafety Forum for Young Scientists is followed by an optional training course on Dynamic Light Scattering for size characterisation of NMs, organised by ACEnano and partner Malvern PanAnalytical is also available on 11th and 12th September 2018. Please register here if you wish to attend the free DLS training.

For more information:
For abstract submission inquiries please contact Anastasios (Tassos) Papadiamantis (A.Papadiamantis@bham.ac.uk).
For registration inquiries please contact Thomas (Tom) Carney (T.Carney@bham.ac.uk).
For any other inquiries please contact Sophie Briffa (BriffaSM@bham.ac.uk).
Download the event brochure here.

ACEnano
Analytical and Characterisation Excellence

HORIZON 2020

https://www.nanosafetycluster.eu/nsc-meetings/3rd-nanosafety-forum-for-young-scientists-malta-2018.html

PATROLS Reports from Chemspec Europe

PATROLS
www.patrols-h2020.eu
Claire Skentelbery
Nanotechnology Industries Association
claire.skentelbery@nanotechia.org

The PATROLS project was in action at the Chemspec Europe, the international exhibition for speciality chemicals, hosted in Cologne on June 20-21. The Nanotechnology Industries Association (NIA) represented the project as the first stakeholder activity of the project, with the intention to engage industry stakeholders and understand their needs and challenges in the safe development of nanomaterials.

NIA spoke to industry participants throughout the tw days, reaching an initial conclusion that most industry actors, unless highly specialised within nanomaterials production, have limited awareness of the requirements for nanomaterials testing. With many companies moving into nanomaterials production and handling as an evolution of their business, rather than core business mission, they face a significant challenge to integrate additional regulatory requirements into planning and budgets.

Advanced test systems for nanomaterial safety assessment, such as those being developed by PATROLS are most likely to be accessed through specialist service providers, rather than integrated in house, and where there is a clear regulatory requirement or market driver for their use.

Information such as this helps projects such as PATROLS to address not only the scientific strength of advanced materials but also to ensure that they sit within a clear framework for company use, linked to regulatory requirements.

PATROLS - Physiologically Anchored Tools for Realistic nanOmaterial hazard aSsessment

Image: PATROLS Consortium

PATROLS is an international project combining a team of academics, industrial scientists, government officials and risk assessors to deliver advanced and realistic tools and methods for nanomaterial safety assessment.

PATROLS will provide an innovative and effective set of laboratory techniques and computational tools to more reliably predict potential human and environmental hazards resulting from engineered nanomaterial (ENM) exposures. These tools will minimise the necessity of animal testing and will support future categorisation of ENMs in order to support safety frameworks.

Joint PATROLS-GRACIOUS-NanoSafety Cluster event on harmonization of Standard Operating Procedures

www.patrols-h2020.eu
Shareen H. Doak, Swansea University
S.h.doak@swansea.ac.uk

On 12-13th June 2018, a joint workshop on SOPs harmonization was held at RIVM, Netherlands. This activity was part of the Nanosafety Cluster (Working Group C) and was sponsored by the EU projects PATROLS and GRACIOUS. It was organized to follow-up on the EU ProSafe 'White Paper' recommendation for harmonised and validated test methods for nanomaterials (NMs) to support regulatory risk assessment. Such SOPs are required to facilitate generation of data that are reliable and comparable, for application in risk assessment and modelling NMs effects.

The ultimate workshop goal was to transfer SOPs towards a CEN/ISO document or an OECD Test Guideline (TG) / Guidance Document (GD), with an intermediate goal of providing SOPs for use within NanoSafety Cluster projects. All 37 participants from 10 different European countries had either hands-on experience with different tests, were familiar with writing SOPs or had expertise on TG development/standardisation to create and advance SOPs on a variety of topics.

The workshop introductory session included 5 invited speakers. The importance of identifying the use or applicability domain of specific SOPs was highlighted by Minne Heringa (RIVM). Toxicological (in vitro) data can be either used in a qualitative way (classification and labelling), a quantitative way (limit value derivation) or in an actual risk assessment, which governs the expected level of SOP validation required for data acceptance. Peter Kearns (OECD) presented the clear regulatory need for alternative assays, and presented the necessity for clarity on the protocol developed to support scientific and regulatory acceptance. Denis Koltsov (ISO TC229 Nanotechnologies chair) explained the route and timelines towards development of an ISO standard; while Martin Clift (Swansea Uni) presented the NanoImpactNet SOP template, which was considered an excellent model for producing new SOPs. Finally, Elisabeth Heunisch (BauA) elaborated on the MALTA project, which is intended to accelerate the process of updating OECD TGs with respect to NMs testing, to better support the up-coming REACH annexe changes.

The following workshop sessions chaired by Flemming Cassee (RIVM), Shareen Doak (Swansea Uni) and Vicki Stone (Heriot-Watt Uni) focused on development of multiple SOPs:

1. Sample preparation for toxicity testing including sonicator probe calibration, NMs dispersion and sample characterization in biological matrices protocols (Keld Alstrup Jensen, NRCWE)
2. Dispersion and ageing protocols to better mimic NMs transformation in the gastro-intestinal tract (GIT) following oral exposure (Roel Schins, IUF)
3. SOPs for multicellular in vitro models of the human GIT and liver (Ali Kermanizadeh, Heriot-Watt Uni)
4. Characterization in biological materials using ICPMS technologies (Ruud Peters, RIKILT & Norbert Jakubowski, Bundesanstalt für Materialforschung und–prüfung)
5. SOPs for oxidative stress and Reactive Oxygen Species measurements, including the development of an assay selection decision tree (Matthew Boyles, IOM)
6. Review of SOPs for genotoxicity assays to identify areas of adaptation required for NMs (Hedwig Braakhuis, RIVM).

Valuable input from the group was collected and drafts of the SOPs discussed will be prepared as a follow-up, corresponding with deliverable deadlines in the EU projects PATROLS and GRACIOUS.

Image: Workshop Participants

PATROLS WEBINAR

https://www.patrols-h2020.eu
Hildegard Luhmann
European Research Services GmbH
hildegard.luhmann@european-research-services.eu

On July 5th, the PATROLS consortium held a webinar enabling participants to find out more about advanced 3d materials for Nanosafety Testing. This webinar introduced the PATROLS objectives, team and impact of the project on future materials development. All interested parties were welcome to join and discuss their own priorities and interests linked to nanomaterials testing.

For future webinars and other events, visit the website: https://www.patrols-h2020.eu

BioNanoNet News

https://www.bionanonet.at/images/BioNanoNet_News_2018_02.pdf
Simone Jagersbacher
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office@bionanonet.at

Team BioNanoNet have announced the publication of their latest newsletter. Besides contributions from BioNanoNet members, reports about projects and activities and an overview of interesting events, the team highlight BioNanoNet member presentations:

- COREMED - Cooperative Center for Regenerative Medicine, JOANNEUM RE-SEARCH (Austria)
- Institute of Electrical and Biomedical Engineering, UMIT (Austria)
- TEMAS AG (Switzerland)

The GRACIOUS website is now live!

https://www.h2020gracious.eu
Stella Stoycheva, Yordas Group
s.stoycheva@yordasgroup.com

The H2020 project GRACIOUS (**G**rouping, **R**ead-**A**cross and **C**lass**I**ficati**O**n framework for reg**U**latory risk assessment of manufactured nanomaterials and **S**afer design of nano-enabled products) has launched its new website: https://www.h2020gracious.eu

The GRACIOUS project will develop a highly innovative science-based framework that supports the assessment of risk posed by the ever increasing array of nanomaterials on the market and under development. The framework will streamline the process for assessing their risk by logically grouping nanomaterials thereby allowing extrapolation between (read-across) nanomaterials and reducing the need to assess exposure to and toxicity on a case by case basis.

SAFENANO'S Latest Newsletter online

The Spring SAFENANO newsletter brings you an update on SAFENANO's involvement in H2020 research projects and highlights the breadth of services offered in nanotechnology risk management. Its latest In the Know provides an insight into 3D printing and the challenges of identifying the associated risks. Visit: http://www.safenano.org/news/

NanoMONITOR 3rd Stakeholders' Day

New Solutions to Support the Monitoring of the Concentration of Engineered Nanomaterials in Indoor Workplaces and Urban Areas. Lessons from LIFE NanoMONITOR

NanoMONITOR
http://www.lifenanomonitor.eu/en
Stella Stoycheva, Yordas Group
s.stoycheva@yordasgroup.com

Earlier this month, NanoMONITOR held its 3rd Stakeholders' Day: New Solutions to Support the Monitoring of the Concentration of Engineered Nanomaterials in Indoor Workplaces and Urban Areas. Lessons from LIFE NanoMONITOR in Thessaloniki, Greece.

The workshop was held as a special session during workshop 2 in the framework of the Nanotexnology 2018: International Conference on Nanosciences & Nanotechnologies. This workshop served as a forum for nanotechnology researchers, industry, and regulators to present and discuss the use of measured data on the concentration of engineered nanomaterials (ENMs) to support the risk assessment of nanomaterials and the implementation of safe exposure scenarios, guaranteeing a high level of protection of the human health and the environment.

The workshop program focussed on the main progress and outcomes of the NanoMONITOR project, which provides scientific-based solutions to support the risk assessment of nanomaterials on a regulatory basis, including critical issues such as environmental, occupational and consumer exposure to ENMs, environmental release and fate in the life cycle and product value chains, and human health impacts of ENMs.

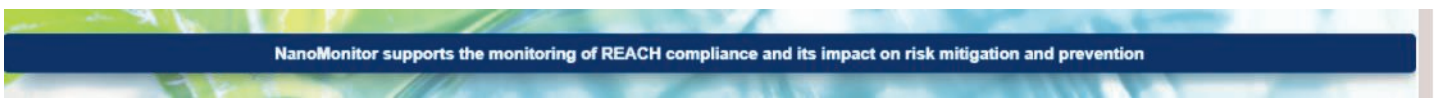
The overall aim of the NanoMONITOR project is the development of a prototype system to generate robust, accessible, comparable and interoperable environmental and indoor air monitoring data to support the implementation of REACH regulation. A new solution to support data processing, the monitoring and sampling of the concentration of ENMs in indoor workplaces and urban areas have been carried out.

The monitoring station prototypes combine remote sensing devices, filtering elements and data transmissions elements, processing and sending the station's data to the NanoMONITOR data acquisition software and visualization platform, which is available for free download. This first prototype, as well as the main outcomes of the project concerning the concentration of ENMs on workplaces and urban areas were presented.

This event was designed for experts in air quality, occupational hygienists, as well as workers and professional users who are interested in learning more about current technologies to measure the concentration of ENMs in indoor workplaces and urban environments. Moreover, it promoted the proper use of ENMs and the uptake of nanotechnology by the industry by providing attendees with up to date information to support **risk assessment**, as well as recommended approaches to assist companies on the evaluation of the exposure to ENMs on a regulatory basis.

Participants had access to a satellite station developed under the scope of the project and were invited to use the satellite station and validate its operability and functions.

For more information visit:
http://www.lifenanomonitor.eu/en/events/new-solutions-to-support-the-monitoring-of-the-concentration-of-engineered-nanomaterials-in-indoor-workplaces-and-urban-areas-lessons-from-life-nanomonitor



Governance of emerging nano-risk in semiconductor industry

A NanoStreeM and caLIBRAte Workshop

NanoStreeM: http://www.nanostreem.eu
Dimiter Prodanov, IMEC
dimiter.prodanov@imec.be

On the 26th of April 2018 representatives of the stakeholder communities gathered in Brussels to discuss the risk assessment and governance framework of nanomaterials that are used in semiconductor industry. The workshop, entitled "Governance of emerging nano-risk in semiconductor industry" was organized by NanoStreeM and caLIBRAte. Nanoelectronics was selected as a interesting use case for risk assessment approaches, due to its rapid innovation cycle and culture of high-profile health, safety and quality management. The workshop program can be found on the dedicated event page.

The workshop was split into three sessions about (1) nanomaterials use in the semiconductor industry; (2) industrial needs and technology advances in risk management; (3) experiences in risk management from nanomaterials producers and downstream users. The workshop profiled 10 invited speakers and 11 panelists from academia, public research institutions, industry and the European Commission.

Throughout the day the following challenges were identified:

- It is difficult to reliably predict the hazards and risks related to the use of new nanomaterials. Because of the exponential trend in new materials, the relative lack of resources makes the regulatory approaches challenging.
- There is a clear safety knowledge gap, notably in emission and exposure assessments. Furthermore, toxicity data about nanoforms of nanomaterials are frequently lacking or are of poor quality.
- Many nanotoxicity databases developed to date are not available for public use or the available data cover only few materials.
- Risk analysis is still technically and methodologically limited. Notably, the available models are very generic and difficult to adapt for everyday use by the industries.

The panelists and the audience focused the discussions around two central questions:
1. How can the regulatory framework be adapted to account for the long delays in availability of toxicological and environmental data on nanomaterials, without slowing innovation that comes with the application of these materials?
2. How can upstream developers, suppliers and formulators cooperate with the downstream users in risk assessment guidance and risk management?

The complete workshop report will be published on http://www.nanostreem.eu/report-governance-workshop

Image: Workshop participants: "Governance of emerging nano-risk in semiconductor industry"

First International Nanoolympiad: Impressions from Iran

By Dr Andrea Haase
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In April this year the first International NanoOlympiad (INO) took place in Pardis Technology Park 20 km north of Tehran, Iran. In total nine teams participated, coming from Russia, South Korea, Malaysia, Taiwan, two from Iran and three from the EU. All participants were young scientists, i.e. undergraduate or postgraduate students, who first had to pass national (or European) pre-selection processes. The overarching topic of this year's NanoOlympiad was nanotechnology in "water and sanitation".

INO presented the participants with a very tight schedule, involving several lectures, workshops, and coaching events. One focus during the event was commercialization, where the students learned about business plans, budgets, IP/ patent issues and how to convince investors of the value of their proposition, which included a pitching training. Another major aim was about intercultural experience and fostering international contacts. For instance all students shared a room with somebody assigned by the organizers such that most had an international roommate. During a mixed team challenge, where new teams were formed, the students worked on a new topic ("air pollution"), which of course was meant as a training for the final presentations but at the same time this offered a valuable new experience of working in new, mixed, international teams. Of course there also was enough time for several excursions, which allowed all to get to know Iran: one to Golestan Palace in Tehran and another to a typical Iranian Bazaar. Two other excursions were science-related, one to visit three Iranian Nanotech-Start-ups and the other to the Iran Nanotechnology Initiative Council (INIC) (www.en.nano.ir).

All teams had to submit a written report before the event, which was evaluated according to: a) novelty, b) science and technology and c) business potential. During the event the teams could prepare their final oral presentations taking into account new knowledge they obtained during the event. All teams gave two oral presentations, one on science and the other on business, each 10 minutes followed by 15 minutes of questions from the judges. For overall evaluation all points of all judges were summed up. The overall winning team was then excluded from individual assessments so that as many different teams had a chance to win a prize as possible. The winners of INO 2018 were: Taiwan (overall), South Korea (Novelty), Malaysia (Science & Technology) and Iran 1 (Business). Congratulations to these teams!

It should be noted that all of the other participating countries have a long-standing tradition in organizing National Nano-Olympiads. For instance the last National Iranian Nano- Olympiad had approx. 30,000 participants and the last Russian one approx. 6,000 participants. For INO 2018 Europe decided rather late to join. So for us clearly there is a chance to start earlier next time, taking into account all the experiences of the wonderful event in 2018. Information on the next INO, scheduled for 2020 will be announced as soon as we have further details.

Impressions of EU Team 1

Anne Bannuscher, Yves Hachenberger, Fabian Kriegel and Lars Leibrock

Initially we were a bit worried about the venue but these thoughts were quickly dispelled by the great hospitality of our hosts. The guesthouse were we stayed was very new, we were even the first guests. We experienced a tight schedule of numerous workshops, a mixed team challenge, where the team with Anne and Fabian won and in parallel we had to prepare for the final presentations of our project. However, there was enough time for excursions to Tehran. We have visited the Golestan Palace and a bazaar. The cultural treasures in the palace were impressive to us, as was the pulsating liveliness in the latter. While dealing with locals our first impressions were confirmed - they were very open, helpful and courteous.
During the final presentation of the projects it became clear that the non-European participants were able to refine and research their ideas longer than we could. Partially they already could present prototypes or patents. Nevertheless it was a valuable experience for us. Each participant also received a souvenir. We had an exciting week in Iran and we would like to thank all organizers and contributors for their efforts.

Impressions of EU Team 2

Alessandro Bonetto, Alice Tagliati, Ana Carrazco Quevedo, Andrea Costa Devoti

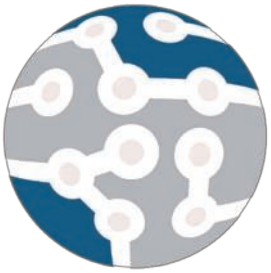
Our experience at INO was very educational and stimulating, both from the scientific and social point of view. It was a great challenge and a fantastic experience. We attended several interesting workshops (i.e. environmental safety, curiosity, management, communication, business & marketing...). We had to find our own idea related to "water and sanitation", develop it in a short time, verify its scientific and technological feasibility and contextualize it in the most suitable market- all in a limited time frame with less than two months.

This was tough but exciting. We, as did our colleagues from the other EU teams, worked very hard, also late at night to present our project in the best possible way using our personal knowledge and taking advantage of the training during INO. The teams of the other countries were, however, very well prepared, partially presenting established technology, some even with patented technologies. But we did not give up. We did not win one of the prizes but returned home with a greater cultural background and the awareness that with commitment and determination we can face very complex challenges. We are proud to have represented the EU at the first INO. INO was above our expectations, the organization was impeccable as were the level of the topics covered. A big shout out to the Iran Nanotechnology Initiative Council (INIC) to have organized such an amazing event, it was a once in a lifetime experience and something we shall not forget anytime soon.

Impressions of EU Team 3

Maria Heilmann, Zengchao You, Tony Bewersdorff

Once arrived in Iran we were surprised by the hospitality of the organizers. Even though it was the first INO and much had only been organized literally at the last second, the organization was perfect. The framework programme designed for us was able to teach us many new aspects related to scientific thinking and problem-oriented work. The focus was on teamwork and, above all, on networking with the other teams. Thus, in addition to the scientific parts, various social activities were included in the program, where we learnt about the culture and the history of this beautiful country and at the same time we got to know each other better. As we became close friends with many other participants we had almost forgotten that it was actually a competition. Nevertheless each team was really able to inspire all with their projects. Even though our team wasn't one of the prize winners, we were very pleased to be part of this wonderful event. We made many new friends and we will never forget the special spirit of INO, which was all about being a community.



NanoCommons

Nano-Knowledge Community

H2020 e-Infrastructure project NanoCommons off to a dynamic start

Read-across approaches, which would reduce the cost of nanosafety research and regulation dramatically by removing the need for extensive laboratory and animal testing, are currently absent for nanomaterials (NMs) in part as a result of data fragmentation and inaccessibility.

NanoCommons will address this gap, by providing a nanosafety knowledge infrastructure, that develops tools to organise and visualise data and relationships between NMs physico-chemical properties and adverse outcomes, makes the data and tools accessible, and integrates existing computational tools for risk assessment and decision support, enables their validation and facilitates the classification and grouping of NMs. As a research infrastructure, a strong focus will be placed on provision of funded access to the tools and expertise required for nanosafety nanoinformactics.

Launched in January 2018 with its kick-off meeting in Salzburg, Austria, the H2020 Research Infrastructure project **NanoCommons**, coordinated by Prof Iseult Lynch of the University of Birmingham, is creating a community framework and infrastructure for reproducible nanoinformatics, and in particular *in silico* workflows for NMs safety assessment and beyond. NanoCommons will deliver a sustainable and openly accessible nanoinformatics framework (knowledgebase and integrated computational tools, supported by expert advice, data interpretation and training), for assessment of the risks of NMs, their products and their formulations. NanoCommons combines the expertise of 14 academic and industrial partners from 10 EU countries (University of Birmingham (UK), Douglas Connect (Switzerland), BioNanoNet (Austria), Centre for Ecology and Hydrology (UK), NovaMechanics (Cyprus), National Technical University of Athens (Greece), Maastricht University (The Netherlands), PLUS University of Salzburg (Austria), LEITAT (Spain), University College Dublin (Ireland), BfR (Germany)) and the US (Duke University, Oregon State University) to offer a complete package of Joint Research Activities to implement the nanoinformatics Knowledge Commons, Networking Activities to facilitate engagement with the research community, industry and regulators, and provision of funded Access to the nanoinformatics tools via 6-monthly funded calls for **Transnational Access**, the 1st of which will be launched later this year (sign-up here to be alerted when the calls open).

NanoCommons is off to a dynamic start with the first hackathon, on "Ontological Annotations of Datasets", scheduled for 8-9 October 2018 in Athens, Greece in conjunction with the 6-month Consortium meeting and the OpenTox Europe 2018 Conference. **Hackathon Registration is now open** and the registration form can be found here.

The next hackathon on the "Development of Data Capture Templates" is planned for the first quarter of 2019 following the completion of a series of tiered case-studies on data curation and online lab-notebook implementation in every day experimental practice.

/cntd...

Image: The NanoCommons Consortium during its kick-off meeting at the Paris-Lodron University, Salzburg, Austria.

The 2nd NanoCommons hackathon will take place in conjunction with the 1st Open Call for Accessing the NanoCommons Services. Training sessions will also be organised for each of the nanoinformatics tools as they are launched.

If you would like to be informed when the next call for funded-Access to tools for nanosafety data management, data visualisation and computational tools will open, please register your interest through the NanoCommons.eu website or access our brochure. You can also let us know about the tools you believe are most significant for you as a member of the Nanosafety Community and that would facilitate your research by taking our short survey. Our motto for NanoCommons is "**we develop, you access**" so ensuring a good match of the services we provide to your research needs is essential!

Looking forward working with you for the advancement of nanosafety informatics research!

The NanoCommons Consortium

NanoCommons
Nano-Knowledge Community

Reliable knowledge on nanomaterials for innovative companies

contactpointnano.ch helps with questions about nanomaterials

Contactpointnano.ch
http://contactpointnano.ch
Ana Milosevic, Christine d'Anna-Huber, Sergio Bellucci, Peter Wick
contactpointnano.ch; Empa
ana.milosevic@empa.ch

A new contact point for start-ups, SMEs and industry bundles the scientific and regulatory expertise in the field of nanotechnology available in Switzerland. contactpointnano.ch thus builds a bridge between research and innovative application.

Switzerland occupies a leading position internationally in the field of nanoresearch. However, when it comes to transposing existing knowledge into practice and fully exploiting the application potential of synthetic nanomaterials, companies face numerous questions and hurdles - from the characterisation of new materials and their safe handling to the continuous changes in national and international regulation requirements. To date, the answers to these questions have to be painstakingly gathered from different sources. contactpointnano.ch closes this gap by providing a single information hub for nano related issues.

Managed by Empa researcher Peter Wick during a two-year pilot phase, contactpointnano.ch will pool and classify the scientific, industrial and regulatory expertise available in Switzerland and make it available to companies according to their needs and requirements. contactpointnano.ch will make no safety assessments nor carry out measurements itself, but instead provide companies with contact to relevant experts, organise trainings and workshops and act as a platform for the exchange of information. The initiative is supported by an expert council, led by professors Barbara Rothen-Rutishauser and Alke Fink from the Adolphe Merkle Institute at the University of Freiburg.

contactpointnano.ch has been officially launched at the Swiss NanoConvention 2018 at ETH Zurich in June 2018. The initiative to promote sustainable innovation has emerged in the context of Swiss nanoresearch, in particular of the Swiss National Research Programme "Opportunities and Risks of Nanomaterials" (NRP64) of the Swiss National Science Foundation (SNSF) and the Action Plan for synthetic nanomaterials. It is supported by the State Secretariat for Education, Research and Innovation (SER), the Federal Office of Public Health (FOPH) and the Federal Office for the Environment (FOEN).

contactpointnano.ch is an independent, national platform pooling the scientific and regulatory knowledge and expertise available in Switzerland on the safe handling of synthetic nanomaterials – from production to use and disposal – and conveying it efficiently and in a generally understandable form to companies (start-ups, SMEs, and established firms).

contactpointnano.ch relies on a broad network of proven experts and thus offers a qualified and transfer of knowledge. It anticipates topics for regular trainings, organizes information events and the exchange of experiences in the area of nano-innovation and nano-safety and keeps track of changes and developments regulatory requirements in Switzerland and abroad. It thus aims to assist the transfer from invention to innovation and to helps Swiss companies to remain internationally competitive.

At contactpointnano.ch companies find competent partners able to assist them directly or to promptly establish tailored contacts to experts and agencies who: i) can convey information on nanomaterials, their safe handling and regulatory provisions, ii) offer expert opinions, access to services, testing and analyses, iii) are involved in research and development cooperation and carry out trainings and workshops on relevant topics.

The team of contactpointnano.ch can be reached by email at contactpointnano@empa.ch

Further information:
www.contactpointnano.ch

Contact: Dr. Peter Wick,
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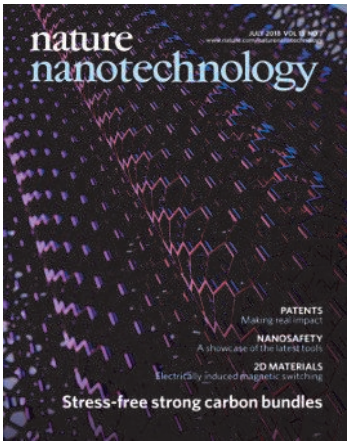
New advances in the hazard and risk assessment of engineered nanomaterials

Fadeel and colleagues published a review on recent advances in nanosafety research in the July 2018 issue of Nature Nanotechnology [vol. 13, issue 7, pp. 537-543]. The review covers recent progress in the nanosafety field, and it takes as its starting point five recent nanosafety projects funded through the Seventh Framework Programme (eNANOMAPPER, SUN, NANOMILE, GUIDENANO, and NANOSOLUTIONS).

The corresponding author of the review is Prof. Em. Kai Savolainen, former coordinator of the EU nanosafety cluster [www.nanosafetycluster.eu]. The review was inspired by the nanosafety conference on "New tools and approaches for nanomaterial safety assessment" held in Malaga, Spain in February 2017. The authors highlight the considerable progress that has been made in recent years as new and sophisticated tools including systems biology and high-throughput screening approaches are being implemented in nanosafety research, and suggest that a paradigmatic shift is needed in the way in which nanosafety assessment is conducted in order to promote the safe and sustainable use of ENMs and effectively boost ENM-driven innovations. The review covers both hazard assessment and risk assessment of ENMs, with reference to recent EU-funded projects as well as other international efforts – not least the transatlantic US -EU nanoEHS platform [www.us-eu.org].

http://www.nature.com/articles/s41565-018-0185-0



nature nanotechnology
PERSPECTIVE
https://doi.org/10.1038/s41565-018-0185-0

Advanced tools for the safety assessment of nanomaterials

Bengt Fadeel[1], Lucian Farcal[2], Barry Hardy[2], Socorro Vázquez-Campos[3], Danail Hristozov[4], Antonio Marcomini[4], Iseult Lynch[5], Eugenia Valsami-Jones[5], Harri Alenius[1,6] and Kai Savolainen[7]*

Engineered nanomaterials (ENMs) have tremendous potential to produce beneficial technological impact in numerous sectors in society. Safety assessment is, of course, of paramount importance. However, the myriad variations of ENM properties makes the identification of specific features driving toxicity challenging. At the same time, reducing animal tests by introducing alternative and/or predictive in vitro and in silico methods has become a priority. It is important to embrace these new advances in the safety assessment of ENMs. Indeed, remarkable progress has been made in recent years with respect to mechanism-based hazard assessment of ENMs, including systems biology approaches as well as high-throughput screening platforms, and new tools are also emerging in risk assessment and risk management for humans and the environment across the whole life-cycle of nano-enabled products. Here, we highlight some of the key advances in the hazard and risk assessment of ENMs.

A critical evaluation of nanopesticides and nanofertilizers against their conventional analogues

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https://rdcu.be/NE4E

Among a wide range of possible applications of nanotechnology in agriculture, there has been a particular interest in developing novel nanoagrochemicals. While some concerns have been expressed regarding altered risk profile of the new products, many foresee a great potential to support the necessary increase in global food production in a sustainable way. A critical evaluation of nanoagrochemicals against conventional analogues is essential to assess the associated benefits and risks. In this assessment, recent literature was critically analysed to determine the extent to which nanoagrochemicals differ from conventional products. Our analysis was based on 78 published papers and shows that median gain in efficacy relative to conventional products is about 20–30%. Environmental fate of agrochemicals can be altered by nanoformulations, but changes may not necessarily translate in a reduction of the environmental impact. Many studies lacked nano-specific quality assurance and adequate controls. Currently, there is no comprehensive study in the literature that evaluates efficacy and environmental impact of nano- agrochemicals under field conditions. This is a crucial knowledge gap and more work will thus be necessary for a sound evaluation of the benefits and new risks that nanoagrochemicals represent relative to existing products.

Toxicol Lett. 2018 Jun 15;290:133-144. doi: 10.1016/j.toxlet.2018.03.019. Epub 2018 Mar 22.

Silver ions are responsible for memory impairment induced by oral administration of silver nanoparticles

Węsierska M[1], Dziendzikowska K[2], Gromadzka-Ostrowska J[3], Dudek J[4], Polkowska-Motrenko H[4], Audinot JN[5], Gutleb AC[6], Lankoff A[7], Kruszewski M[8].

Arno Gutleb, LIST | arno.gutleb@list.lu

Abstract

Increasing use of silver nanoparticles (AgNPs) results in increased human exposure. AgNPs are able to cross brain-blood barrier and are a risk factor for the brain. Thus, we hypothesized that AgNPs exposure might affect hippocampal dependent memory, which required cognitive coordination processes. To verify the assumption, in this study we evaluated the effects of orally administered bovine serum albumin (BSA)-coated AgNPs on spatial memory, which engage cognitive coordination processes for on-going stimuli segregation. Rats following 28 days of oral administration with 1 mg/kg (n = 10) or 30 mg/kg (n = 10) BSA-AgNPs or saline, a control groups (n = 10, n = 8), were tested with an active place avoidance task in the Carousel Maze test. The study revealed significant impairment of long- and short-term memory, irrespectively of dose of AgNPs, whereas non-cognitive activity was on a similar level. We found significantly higher content of silver in the hippocampus in comparison to the lateral cortex. No silver was found in the cerebellum and the frontal cortex. The nanoSIMS analysis reveal a weak signal of silver in the hippocampus of AgNPs treated animals that should be attributed to the presence of silver in ionic form rather than AgNPs. Our findings indicate that oral exposure to a low dose AgNPs induces detrimental effect on memory and cognitive coordination processes. The presence of silver ions rather than AgNPs in different brain regions, in particular the hippocampus, suggests crucial role of silver ions in AgNPs-induced impairment of the higher brain functions.

DOI: 10.1016/j.toxlet.2018.03.019

Zinc Oxide Nanoparticles and Voltage-Gated Human K_v11.1 Potassium Channels Interact through a Novel Mechanism

Stefania Piscopo Euan R. Brown

Abstract

Membrane–nanoparticle interactions are important in determining the effects of manufactured nanomaterials on cell physiology and pathology. Here, silica, titanium, zinc, and magnesium oxide nanoparticles are screened against human hERG (Kv11.1) voltage-gated potassium channels under a whole-cell voltage clamp. 10 µg mL−1 ZnO uniquely increases the amplitude of the steady-state current, decreases the rate of hERG current inactivation during steady-state depolarization, accelerates channel deactivation during resurgent tail currents, and shows no significant alteration of current activation rate or voltage dependence. In contrast, ZnCl2 causes increased current suppression with increasing concentration and fails to replicate the nanoparticle effect on decreasing inactivation. The results show a novel class of nanoparticle–biomembrane interaction involving channel gating rather than channel block, and have implications for the use of nanoparticles in biomedicine, drug delivery applications, and nanotoxicology.

DOI: 10.1002/smll.201703403
https://onlinelibrary.wiley.com/doi/full/10.1002/smll.201703403

PhD Candidate for the NanoCommons Project FHML/NUTRIM – Department of BioInformatics

NanoCommons: https://www.nanocommons.eu
Contact: Egon Willighagen, Maastricht University
Email: egon.willighagen@gmail.com

Nanotechnologies is increasing our ability to improve our quality of life. Whether is it innovative medicine, ingredients in new beneficial products, or reducing the cost of smartphones, nanomaterials have found their way into our society. However, like any chemical of natural or synthetic source, sometimes the chemical substance cause adverse outcomes. The European Union has funded research projects to explore nanomaterials, their many uses, and their potential toxicity. Furthermore, there is an increasing interest in the development of Adverse Outcome Pathways for the regulation of chemicals on the market, particularly when combined with molecular pathways, such as found in WikiPathways. However, a common language and infrastructure is missing that unites these research fields. That is where NanoCommons comes in.

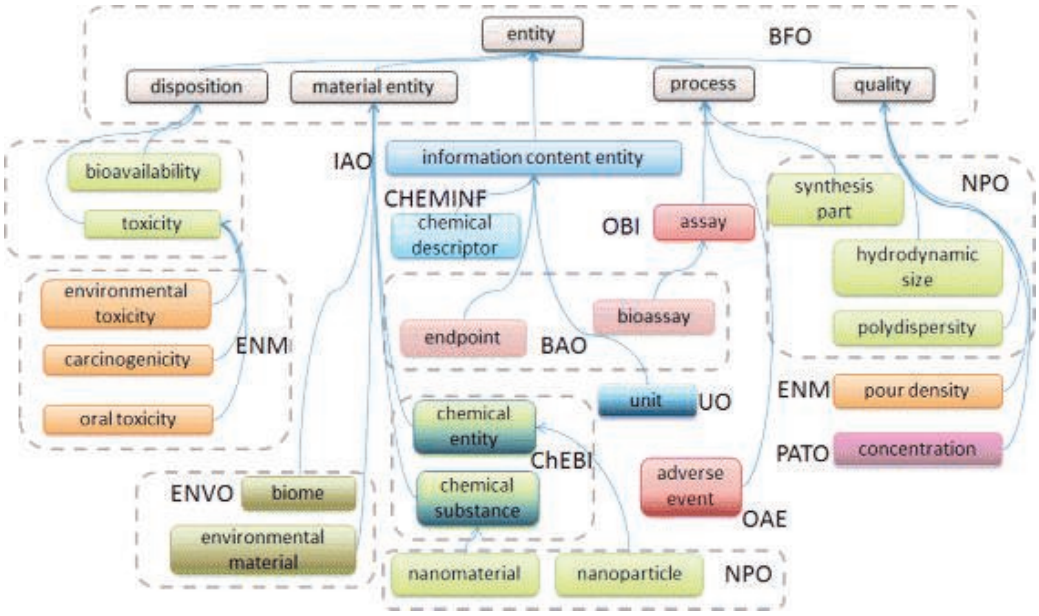


Image: Graphical overview of one of the first versions of the eNanoMapper Ontology.
© Hastings et al.; Creative Commons Attribution 4.0,
https://jbiomedsem.biomedcentral.com/articles/10.1186/s13326-015-0005-5

Requirements

We seek a candidate with strong academic abilities and the ambition to become an excellent researcher. You have completed a research master in the natural (biological, chemical, biomedical) sciences, or an equivalent 2-year degree. Outstanding students with a 1-year regular master can be accepted in exceptional cases when their profile exactly matches the requirements for this research project.

We are looking for a prospective PhD candidate with either a background in bioinformatics, ontology development, cheminformatics, or equivalent, with affinity for data integration issues and systems biology approaches. The ideal candidate will have covered all aspects, but candidates with experience in one of these and an interest in the other are also encouraged to apply.

For more information and to apply:
https://www.academictransfer.com/en/48481/phd-candidate-for-the-nanocommons-project-fhmlnutrim-department-of-bioinformatics

Proposal Writer positions available

Iconiq Innovation, Market Harborough

Iconiq Innovation is a dynamic innovation consultancy dedicated to securing grant funding for our clients. The team here has secured over €95 million in the last 5 years, with substantial funding in the areas of coatings, printed electronics, composites, materials science, packaging and renewable energies.

Our team is seeking enthusiastic, creative and self-motivated candidates to write funding proposals for new product or process development predominantly for Innovate UK and EC Horizon 2020. This role requires someone who can assimilate complex technical and commercial market information quickly, plan work to meet deadlines as well as work closely and maintain relationships with multiple stakeholders including clients, research providers, colleagues and project partners.

The position offers the opportunity to work with a range of dynamic, highly innovative companies, from multinationals and SMEs to leading research and technology organisations to support the development of ground breaking new technologies.

If you are educated to degree level and beyond (PhD, MSc, MBA) in a technical or business-related subject, with a strong enthusiasm for the commercial factors relating to new product development, this could be the next role for you. The role is full-time and based at our offices in Market Harborough with some national and international travel expected occasionally. The role comes with a competitive salary package.

* A full job description is available on our website, or alternatively get in touch with us
* To apply or discuss the role further, please send a cover letter outlining your suitability for the role together with your CV to support@iconiqinnovation.com

Job opportunity at CEA NanoSafety Platform on EHS risk management (permanent position)

Description du poste

Domaine: Matériaux, physique du solide
Contrat: CDI
Intitulé de l'offre: Ingénieur chercheur Risques Emergents & Nanomatériaux H/F
Statut du poste: Cadre
Description de l'offre:
Pour développer nos activités nanomatériaux, et faire face aux enjeux techniques, économiques et sociaux qu'il représente, nous recherchons un expert F/H en prévention des risques liés aux polluants de l'air (particules, nanoparticules, composés volatils).

Votre mission:

- Mettre en place des mesures et des processus pour analyser et encadrer les risques (postes de travail, environnement …) liées aux nouveaux matériaux : risques chimiques, nanomatériaux, ATEX…
- Manager des projets collaboratifs (européens, nationaux, locaux) en lien avec des partenaires industriels & académiques : apporter votre conseil & votre expertise HSE, définir/comprendre le besoin, définir une stratégie, réaliser les rapports techniques, suivre l'avancement du projet.
- Structurer, pérenniser et valoriser l'activité HSE de la PNS : Consolider un réseau, valoriser la production scientifique et l'expertise de l'équipe, assurer une veille bibliographique… Déplacements ponctuels à prévoir Profil du candidat

For more information, email samir.derrough@cea.fr

PhD Position at CEA LITEN - NanoSafety Platform, Grenoble, France

https://www-cea-fr.admsite.extra.cea.fr/cea-tech/pns/en
Dr. Simon Clavaguera, CEA
simon.clavaguera@cea.fr

Funded PhD opportunity entitled "Design, development and evaluation of sensors based on electrical methods for detecting and quantifying airborne ultrafine particles" at CEA Grenoble, France.

We are looking for a highly motivated candidate with Engineer and / or Master of Science degree and good level of general and scientific culture. A strong background in material science, aerosol science and/or electrical engineering is required.

Title:
Design, development and evaluation of sensors based on electrical methods for detecting and quantifying airborne ultrafine particles

Research field:
Air quality monitoring is a real societal challenge that leads to strong expectations from the public. Currently, there is no reliable low-cost particulate matter sensors that covers a wide range of particle size. Many optical sensors are reported but respond to particles larger than 300 nm by providing their mass concentration (PM10 and PM2.5). Only few ergonomic and accurate personal monitors allow the assessment of individual exposure to manufactured nanomaterials and ultrafine particles. This is indicative of a high potential for exploitation.

Description of the research topic:
We propose to develop particle microsensors offering granulometric sizing over the 5-300 nm range and the chemical composition of the collected material. The purpose of this PhD thesis is to develop, assess, theoretically and experimentally, the performances of an integrated device for the detection and the quantification of particles based on ion diffusion charging. The device is aiming to sort the particles according to their electrical mobility and to collect them selectively on a substrate according to size-resolved concentric rings. Quantitative analysis of particle charging and losses will be carried out. The electrical detection using electrometers will allow quantification in real time thanks to an appropriate signal processing algorithm. Several metrics of interest will be explored such as number-based concentration, LDSA (lung-deposited surface area) concentration and mass concentration. We propose the development of a simplified system allowing the monitoring of several channels (5-20 nm, 20-100 nm, 100-300 nm) in order to propose a solution able to determine and locate sources of ultrafine particles in real time (application to urban pollution).

Applicant profile:
We are looking for a highly motivated candidate with Engineer and / or Master of Science degree and good level of general and scientific culture. A strong background in material science, aerosol science and/or electrical engineering is required. Good analytical, synthesis, innovation and communication skills. Qualities of adaptability and creativity. Motivation for research activity. Coherent professional project.

Practical information:
This interdisciplinary work will be performed in the premises of the NanoSafety Platform (PNS) of the CEA Grenoble in very close collaboration (PhD supervision) with the CERTES of the University Paris-Est Creteil (UPEC). The PhD grant is funded by CEA/DRT/LITEN/DTNM and will start on the 1st of November, 2018.

Contact details:
In order to apply, please contact Dr. Simon Clavaguera (simon.clavaguera@cea.fr). Application files must include a motivation letter, a detailed CV, and 2 recommendation letters. **Incomplete files will not be examined.**

Thesis supervisor: Evelyne Gehin (UPEC - CERTES)
Thesis co-supervisor: Simon Clavaguera (CEA/DRT/LITEN

PATROLS Project seeks Research Officer/Laboratory Manager

www.patrols-h2020.eu
Shareen Doak
Swansea University
s.h.doak@swansea.ac.uk

PATROLS
Advanced Tools for NanoSafety Testing

We are looking to appoint an energetic new Research Officer/Laboratory Manager to join our team at Swansea University Medical School.

Main Purpose of the Post

The appointee will work closely with Professor Shareen H. Doak on all aspects of the management of her research group. The post-holder will be directly involved in supporting the research group by helping to train and manage PhD students, undergraduate and postgraduate project students, visitors and new comers to the laboratory. They will handle day-to-day technical questions in the broad fields of molecular biology (cancer research), toxicology and nanotoxicology and generally facilitate research in the lab. The job will also include the opportunity to establish and optimise protocols, perform hands-on research using molecular biological and (nano)toxicology-related techniques, contribute data and assist with manuscript preparation.

We are looking for a candidate with excellent interpersonal and organisational skills, exceptional written and oral communication skills, computer literacy, and previous research experience in a related field. The post holder must have proven abilities to work closely with others as part of an effective team, with experience of leading research projects. They should have a broad skills base, including: research study design, implementation, data analysis / interpretation and reporting, and a track record of effective delivery.

Previous research experience in any of the following areas is highly desirable: cancer molecular biology, (molecular / geno)-toxicology, nanotoxicology, 3D cell culture models. Other skills that are desirable, but not required, include experience developing and maintaining databases, websites and social media outlets.

The closing date is 30th July 2018

For more details, go to:
http://www.swansea.ac.uk/personnel/jobs/details.php?nPostingID=13698&nPostingTargetID=25752&option=52&sort=DESC&respnr=1&ID=QHUFK026203F3VBQB7VLO8NXD&LOV5=7977&JOBADLG=UK&Resultsperpage=20&lg=UK&mask=suext

"I don't understand. Didn't you get the résumé I texted?"

"Instead of my résumé, I've printed out my daily horoscope for the past year. You'll see that I'm a special person who's destined for great things!"

European Metrology Network (EMN) for nanomaterials characterization

https://msu.euramet.org/current_calls/support_for_networks_2018/index.html

Georges Favre
LNE
georges.favre@lne.fr

EURAMET (www.euramet.org) is currently working on the creation of European Metrology Networks (EMNs) on areas of major strategic importance for Europe. The aims of EMNs are to support the take-up of research outputs from the metrology community, the collection of needs from industry to inform future research and to host a long term ongoing dialogue between the metrology community (National Metrology Institutes / NMIs) and relevant stakeholders. Expected activities within EMNs may include a lot of actions among which foresight and common vision, development of a Strategic Research Agenda, knowledge sharing amongst researchers, mobility and training of researchers, development of shared Research Infrastructures or dissemination of research results.

Some funding can be obtained through EMPIR calls for proposals (European Metrology Programme for Innovation and Research) to support the creation of such networks on the model of "H2020 CSA".

LNE (France) and some others NMIs (LGC & NPL for UK, BAM & PTB for Germany, DFM for Denmark, RISE for Sweden, SMD for Belgium) are currently discussing about the opportunity to propose in the 2019 EMPIR's call for proposals an EMN dedicated to nanomaterials (NM) characterization issues. The overall goal of this EMN could be to create a well spread network across Europe regarding high level quality metrological reference tools and expertise dedicated to the characterization of NM in order to support innovation and competiveness of European industry, implementation of regulations and risk assessment studies. The possible envisaged goals are the following:

1. Gather all actions dealing with the metrology of NM within EURAMET Technical Committees and research programmes (iMera+, EMRP, EMPIR, FP7, H2020) and share at the European level corresponding national needs with the aim to update the vision of the FP7 project CO-NANOMET.

2. Promote access to state of the art characterization infrastructures and primary references (instruments, protocols…) for industry and Member States laboratories as recommended by the High Level Group of EU Members States and Associated Countries on Nanosciences, Nanotechnologies and Advanced Materials. This will be achieved by the building of a database of European NMIs expertise and capabilities for NM characterization and available Reference Materials.

3. Provide services (characterization, calibration, consultancy, training…) to industry and to the main European official entities. Reference values will be provided to support PT schemes needed to build an accreditation framework on NM characterization which is critical to demonstrate European testing laboratories competencies.

4. Develop and propose to and with interested stakeholders certified reference materials, measurement uncertainty evaluation tools, guidance documents (e.g. NM/matrix preparation…) and adequate standards through active cooperation with CEN/TC 352, ISO/TC 229, VAMAS, BIPM/Consultative Committee and NSC.

5. Disseminate information and training on terminology, metrological tools, procedures and standards through a dedicated website and regular publications and the organisation of different events (webinar, workshop, e-learning, inter-laboratories comparison…).

Some non-NMIs partners (industry, risk assessment agencies and laboratories, EU-NCL…) are already interested in being involved in these discussions and any additional new partner is welcome.

SAFETY ASPECTS IN PILOT LINES—an EPPN-NSC i2L joint session

The workshop will be held during the 6th International Conference NanoSAFE 2018 on Wednesday 7th of November in Grenoble France. Organized every two years since 2008, NANOSAFE Conference is intended for sharing latest research results on health and safety issues related to nanomaterials and beyond for a socially responsible approach.

EPPN - European Network For Pilot Production Facilities And Innovation Hubs
NSC i2L – Industrial Innovation Liaison Group of the NanoSafety Cluster

The "Industrial Innovation Liaison (i2L)"working group is part of the NanoSafety Cluster (NSC) as a crosslinking working group. EPPN is a H2020 CSA project which intends to boost the European competitiveness through the exploitation of the existing European pilot line production facilities across Europe. The project objective is to provide a sustainable interactive and dynamic participatory digital market place (matchmaking tool) allowing pilot lines to become connected with users (technology up-takers, policy makers, investors and other actors) in the ecosystem, along industrial value chains. One major objective is to bridge the existing gap between nanosafety research, research into technology development, and industry, by promoting a two-way communication channel to facilitate the understanding of the real industrial needs (EPPN-side) and promote the industrial implementation of solutions developed by the NSC.

Workshop on SAFETY ASPECTS IN PILOT LINES—an EPPN-NSC i2L joint session

The workshop will allow bringing together all nano-safety relevant experts from pilot line/production projects, hence, real-life and application-oriented nanosafety and Safe-by-Design expertise. The workshop is aiming at helping pilot projects in order to assess and tackle safety issues throughout harmonization of the approaches and promotion of available tools. To reach that goal, the following topics will be presented:

- EPPN mini survey on processes and materials used in pilot lines along with relevant exposure scenarios
- Selected tools and methods that are available to conduct safety assessment and implement risk minimization measures in workplaces
- Critical review on conducted case studies from recently ended and ongoing H2020 projects This interactive session will promote discussion between EPPN and NSC in order to address the needs from pilot projects with nanosafety expertise. The discussion should also lead to potential future cooperation between projects for the development of cross case studies and to joint dissemination of projects results.

Registration:
To attend the workshop, please register for the NanoSAFE 2018 conference:
http://www.nanosafe.org/ceatech/pns/nanosafe/en

For more information, please contact:
EPPN Session Chair Dr. Amro Satti, LEITAT (Spain) asatti@leitat.org
NSC i2L Session Chair Andreas Falk MSc, BioNanoNet (Austria) andreas.falk@bionanonet.at
NSC i2L Session Co-Chair Dr. Simon Clavaguera, CEA (France) simon.clavaguera@cea.fr

The 6th International Conference NANOSAFE will be hosted on 5-9 November 2018 at Maison MINATEC®, Parvis Louis Néel, 38054 Grenoble, France

EPPN
enrich collaboration and sharing

nanoSAFE'18

European Centre for Risk Management and Safe Innovation in Nanomaterials & Nanotechnologies (EC4SafeNano) Workshop

Blueprint for Nanosafety Platform Development & Sustainability (BNP-DS)

Monday 5th of November 2018
NANOSAFE 2018 conference in Grenoble, France.

EC4SafeNano

This is a EU-funded project for the development of a distributed Centre of European organizations offering services for Risk Management and Safe Innovation for Nanomaterials & Nanotechnologies (EC4SafeNano). The center will be structured as a hub-based network and will work with established platforms and centers of excellence for nanosafety across Europe and internationally.

The EC4SafeNano network members can:

- access resources to start a new or develop an existing nanosafety platform.
- exchange/interact with experts on one platform. o consult on needs, resources and services.
- harmonize nanosafety related practices on EU-wide scale.
- have EU-wide acceptance of the study results in recognition with EC4SafeNano.
- access various workshops or activities organized by other network members.

BNP-DS workshop

- BNP-DS will focus on the production of a blueprint (a set of guidelines for do's and don'ts) for the development and sustainability of a nanosafety platform.
- It will be an interactive session between the representatives of various nanosafety platforms and other stake holders.
- It is a first step towards the development of EC4SafeNano network for nanosafety platforms.

Interested? Join us at the workshop...

On Monday, 5 November 2018 From 13h to 15h At nanoSAFE 2018 Conference (5-9 Nov 2018) Maison MINATEC®, Parvis Louis Néel, 38054 Grenoble, FRANCE

For more information, please contact

Project coordinator: Dr. Emeric Frejafon, INERIS (France)
emeric.frejafon@ineris.fr Tel: +33 (0) 3 44 55 63 13
Task leader: Dr. Neeraj Shandilya, TNO (The Netherlands)
neeraj.shandilya@tno.nl Tel: +31 (0) 8 88 66 37 56

The EC4SafeNano project receives 2 M€ funding from the EU's H2020 research and innovation program under grant agreement No 723623. EC4SafeNano This is a EU-funded project for the development of a distributed Centre of European organizations

Scientific Workshop on Grouping of Nanomaterials

OECD joint meeting with NanoReg2 and Gracious to Host Scientific workshop on Grouping of Nanomaterials.

September 12-13, 2018— Paris

NanoReg2 | www.nanoreg2.eu
Sean Kelly, Nanotechnology Industries Association
sean.kelly@nanotechia.org

The Nanosafety Cluster projects NanoReg2 and Gracious, focussed on grouping, have come together with the OECD Working Party for Manufactured Nanomaterials (WPMN) to host a prestigious conference in Paris in September. The workshop immediately follows the a WPMN meeting on Physico-Chemical Parameters Framework for the Risk Assessment of Nanomaterials, which brings together international experts to review the outcomes of two joint projects on physico-chemical properties of nanomaterials and their measurement.

The NanoReg2 (www.nanoreg2.eu) and Gracious (www.h2020gracious.eu) workshop will build upon the OECD meeting, with synergies between the grouping approaches taken by both projects and the physico-chemical parameters and their measurement and reporting that will be covered as part of the OECD meeting. The final agenda and speakers for the grouping workshop will be announced in due course, but session topics will include:

- Grouping of nanomaterials: Principles, history and context of Grouping activities
- Over-arching Grouping schemes
- Grouping in practice - Connecting to test methods and strategies
- Development of Grouping recommendations and next steps

Meeting deliverables

Outcomes of the workshop will include recommendations on nanomaterials grouping that can support global regulations and standards development.

Who should attend?

The workshop invites participation from stakeholders with experience of nanomaterials grouping and physico-chemical and hazard assessment. Stakeholders from industry and regulatory backgrounds are especially welcome. Participation in the workshop will be free, with delegates covering their own travel and subsistence costs. Places are limited and potential participants are required to provide a short summary of their relevant expertise to allow the organisers to ensure representation from a diverse range of stakeholders.

Registration is open to delegates interested and able to actively participate towards meeting objectives. There is no charge for participation, and delegates are liable for their own travel and accommodation costs.

Places at the meeting are limited and the Secretariat reserves the right to place delegates on a reserve list if there are multiple registrations from the same organisation or they do not strongly meet the objectives for participation as follows:

- Be able to contribute to mapping priorities for grouping and be active in the breakout sessions on needs, purpose and constraints
- Be able to help build a roadmap of categorisation and present peer-reviewed studies on grouping – what is and is not possible

For more details and to apply for a place, complete the form available at: http://nanotechia.org/webform/registration-scientific-workshop-grouping-nanomaterials-nanoreg2-and-gracious-h2020-projects

International Conference on Functional Nanomaterials and NanoDevices
3-5 September 2018, Vienna, Austria

http://www.nanomat2018.com

European Nanoscience and Nanotechnology Association
abstracts2018@europenanoscience.org

The International Functional Nanomaterials and Nanodevice Conference 2018 aims to bring together leading scientists, researchers, engineers, and technology developers in nanotechnology to exchange information on their latest research progress and innovation.

This Conference will include a series of symposia focused on four main areas which are: Functional Nanomaterials Synthesis and Characterization; Devices for Energy Storage and Energy Conversion; Nanobiotechnologies and Nanodevices; and Nanotechnology for Environmental Studies & Safety Issues.

NanoTox 2018 - 9th International Conference on Nanotoxicology

18. - 21. September 2018

Dorint-Hotel Neuss

The 9th International Conference on Nanotoxicology, to be held in Neuss, Germany, on 18-21 September, 2018, is rapidly approaching! Registration is open, the program is complete, and all information about the conference is available online. The link below will take you directly to the registration page.

Please note that early registration is open until July 20th.

http://nanotox2018.org/Participation.html

5th World Congress on Microbial Biotechnology

September 17-18, 2018 in Lisbon, Portugal

http://microbialbiotechnology.cmesociety.com
microbialbiotechnology@pulsusmeetings.org

PULSUS Conferences invites all the participants from all over the world to attend "5th World Congress on Microbial Biotechnology" under the theme "Microbial Biotechnology" during . This includes prompt keynote presentations, Oral talks, Poster presentations and Exhibitions. Microbial Biotechnology 2018 is a global platform for microbiologists, biotechnologists, researchers, doctors, scientists, faculties, students and other subject matter experts, to discuss about microbial biotechnology.

Microbial Biotechnology can be defined as one of the aspect of biotechnology which involves the use of the microorganisms or their products. Microbial biotechnology is also referred to as industrial microbiology because of its new discoveries made in the field of genetic engineering. Industrial microbiology was initially established for the alcoholic fermentation process to produce wine and beer, and later it was used for microbial production of antibiotics, enzymes, butanol, citric acids etc. Recent research has shown that microbial biotechnology plays major important role in improved vaccine production and disease-diagnostic tools.

22nd International Conference on Advanced Materials & Nanotechnology

September 19-21, 2018, Tokyo, Japan.

https://advancedmaterials.conferenceseries.com/registration.php
advancedmaterials@materialsconferences.org

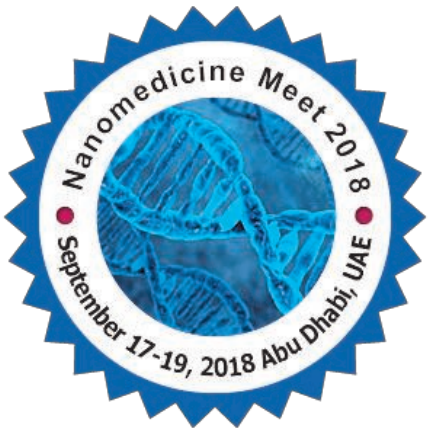
The Organizing Committee invites participants from all over the globe to take part in this annual conference with the theme "Exploring the Possibilities in the Field of Advanced Materials and Nanotechnology". Advanced Materials 2018 aims at sharing new ideas and new technologies amongst the professionals, industrialists and students from research areas of Advanced Materials and Nanotechnology to share their recent innovations and applications and indulge in interactive discussions and technical sessions at the event. The Conference will also have a space for companies and/or institutions to present their services, products, innovations and research results.

Advanced Materials 2018 and Nanotechnology involves the tracks like Advanced Materials and Functional Devices, Engineering Materials, Composite Materials, Magnetism & Multiferroism, Optical materials and plasmonics, Energy and Harvesting Materials, Nanotechnology-Basics to applications, Nanopore science, Nanomedicine, Bio Nanotechnologies, Carbon nanostructures and graphene, Spintronics, Nanoparticle synthesis and applications.

World Congress on Nanomedicine and Nanotechnology in Healthcare

September 17-19, Abu Dhabi

Eva Mathew, ME Conferences
nanomedicinemeet2018@gmail.com



ME Conferences invites all the participants from all over the world to attend "World Congress on Nanomedicine and Nanotechnology in Healthcare" 17-19 September, 2018 in Abu Dhabi, UAE.

This includes a well-balanced line-up of speakers, covering both broad and specific topics of interest. And it provides an opportunity to learn about the complexity of diseases, discuss interventional procedures, look at new and advanced Nanotechnologies and their efficiency and efficacy in the treatment of various diseases and also in Healthcare treatments.
https://nanomedicine.nanotechconferences.org

3rd Open Meeting, European Conference on "Standardization for Nanotechnologies and Nanomaterials for safer products, production and uses"

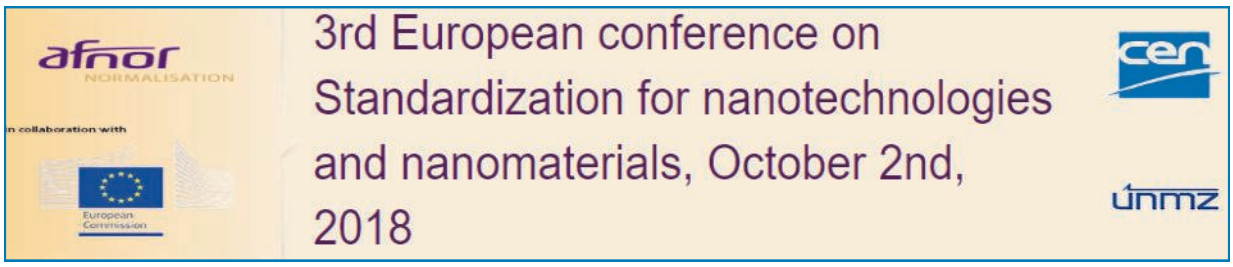
2nd October 2018, Marriott Brussels, Grand Place, Brussels, Belgium

CEN/TC 352 "Nanotechnologies" is proud to announce the 3rd open meeting on "Standardization for Nanotechnologies and Nanomaterials for safer products, production and uses". The Open conference in Brussels will present the standardization work as well as prospective research activities and societal interests over the next coming years. Various Round Tables will be organized with practitioners, researchers and policy makers, notably on the coherence between scientific knowledge, standardization activities and regulation as well as on the usefulness of standardization workplans for all stakeholders (industries, society and regulation bodies).

This meeting is open to all stakeholders and is organized by CEN/TC 352 "Nanotechnologies" in collaboration with CEN CENELEC Management Centre (CCMC) and the European Commission (EC).

For more information, visit: https://www.afnor.org/en/news/nanotechnologies-afnor-and-cen-to-attend-the-3rd-european-conference-in-brussels

For details on the Program, Venue and Registration, visit: http://international-events.afnor.org/nanotechnologies_openmeeting_2018



This conference is open to everyone who registers in advance. Participation and lunch are free of charge.

Invitation to Join Nanotechnology 2018

https://nanotechnology.euroscicon.com
Peter Mark, EuroSciCon Ltd
nanotechnology.euroscicon@gmail.com

We take great pleasure in inviting your esteemed self to "19th EuroSciCon Conference on Nanotechnology" scheduled during **Oct 04-06, 2018** in the city of Amsterdam, Netherlands to join us as a Speaker/Exhibitor/Delegate and share your experiences to enlighten esteemed personalities and researchers by attending the conference.

Salient features:
People from Industries, research institutes, academic universities, associations and societies will be attending. Your presence will definitely have a positive impact on their future ventures and innovations.
For more details: https://nanotechnology.euroscicon.com

21st World Nanotechnology Congress

October 11-13, 2018 at Dubai, UAE.

Jessie Carline
nanotechnologycongress2018@gmail.com

The 21st World Nanotechnology Congress 2018 is expected to give in-vogue research phase to Nanotechnologists, enlisted and diverse pros and understudies working in the field to consider, exchange views and their experiences before an extensive worldwide social occasion of individuals. The social gathering welcomes Presidents, CEOs, Delegates and present-day authorities from the field of Nanotechnology, Nanoscale, Material Science, and other relevant administration positions to participate in these sessions, B2B get together and board talks.

https://nanotechnologycongress.conferenceseries.com/abstract-submission.php

2018 IEEE 13th Nano Materials & Devices Conference (NMDC 2018)

14-17 October 2018, Portland, Oregon, USA

The 2018 IEEE 13th Nano Materials & Devices Conference (NMDC 2018) will be held in Portland, Oregon, USA on 14 -17 October, 2018 at the Embassy Suites Downtown hotel. NMDC is an annual conference sponsored by the IEEE Nanotechnology Council (NTC).

NMDC aims to develop critical assessment of existing work and future directions in nanotechnology research including nanomaterials and fabrications, nanoelectronics, nanophotonics, devices, and integration.

This conference will bring together key researchers from every sector in the nanotechnology research field, with a special focus on materials and devices.

This year, NMDC 2018 is soliciting papers and sessions on Materials and Devices for heterogeneous nano/ biomedical systems in these areas:

- Nanomaterials & nanodevices
- Properties, Fabrication and applications of nanomaterials, nanosensors and nanomagnetics
- Special Applications
- Nanotechnology, Nanostructures and Nanosystems
- Modeling and simulation of nano-materials, nanostructures and nanodevices
- Emerging topics related to nanomaterials, nanodevices and nanostructures
- Education in nanotechnology

We sincerely look forward to your participation in NMDC2018!
http://sites.ieee.org/nmdc/nmdc-2018/

NANOCON

OCT 17 - 19 2018 Hotel Voronez I Brno Czech Rep. EU

10th Anniversary International Conference on Nanomaterials - R&A

October 17-19 2018, Brno, Czech Rep.

Nanomaterials - preparation, properties, characterization. Applications of nanotechnologies in industry, environment, medicine and biotechnology. The influence of nanomaterials to environment, health; metrology and standardization of nanomaterials. The topic nanomaterials for medicine will be accentuated in the 10th NANOCON conference. The conference will be opened by the plenary session with the appearance of significant speakers focused on research and applications of nanomaterials. Conference abstracts will be accepted into five theme sessions.

Registration is open. Please register.

https://www.nanocon.eu/en | info@nanocon.cz

nanoSAFE 2018—Last call for abstract submissions

http://www.nanosafe.org/

Simon Clavaguera, CEA

simon.clavaguera@cea.fr

We are pleased to announce the new deadline for abstract submissions for the 6th International Conference NanoSafe in France on 5-9 November 2018. Organized every two years in Grenoble since 2008, the NanoSafe conference is intended for sharing latest research results on health and safety issues related to nanomaterials and beyond for a socially responsible approach.

Abstract submissions—Deadline: 13th July

http://nanosafe2018.insight-outside.fr/index.php?onglet=4

Participants can access the forms on the conference website http://www.nanosafe.org/ and will receive an early bird discount by registering before October 15th.

10th International Conference on Materials for Advanced Technologies, 23-28 June 2019, Singapore

Encouraged by the success of the International Conference on Materials for Advanced Technologies (ICMAT) series held since 2001 and the impact it has created among the materials science and engineering research community both in the region and elsewhere, the Materials Research Society of Singapore (MRS-S) will be organizing the 10th edition of the conference series from 23 to 28 June 2019 in Singapore.

The first 9 conferences in this biennial ICMAT series attracted more than 23,000 participants including 25 Nobel Laureates and hundreds of distinguished plenary & keynote speakers, in addition to thousands of invited speakers

The upcoming 10th conference will have 39 technical symposia, 10 plenary lectures and several theme, keynote, invited, contributed oral and poster presentations with the expected participation of 3,000 delegates internationally.

One of the largest conferences of its kind, each and every edition of this series has proved to be a premier scientific platform for both local and international materials scientists, engineers and technologists to share their expertise and knowledge.

We welcome you to join us at ICMAT 2019, to celebrate its 10th edition and our continuing efforts in advancing materials research

Chair
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About the NanoSafety Cluster

The EU NanoSafety Cluster maximises the synergies between European-level projects addressing the safety of materials and technologies enabled by the use of nanoparticles. The studied aspects include toxicology, ecotoxicology, exposure assessment, mechanisms of interaction, risk assessment and standardisation.

The Cluster is an initiative of the European Commission Directorate-General for Research and Innovation (DG RTD), which sponsors these large projects. Overall, Europe targets safe and sustainable nanomaterials and nanotechnology innovations. Cluster projects contribute to assuring environmental health and safety (EHS) of this Key Enabling Technology.

The Cluster also is an open platform for dialogue and exchange. Researchers, regulators, administrators, industry, civil society representatives... if you have an interest in EHS and nanotechnology, you are very welcome to participate in Cluster activities whether or not you are a partner in formal European projects.

This site is your gateway to the Cluster projects, as well as to Working Groups formed to address transversal concerns. The structure of the cluster can be found here.

This included Task forces that work on a specific topic during a limit duration

Explore the menu, read our Compendium, subscribe to our rich Newsletter, keep up to date with events, submit your own nano-EHS related news or invitations to meetings...