



Welcome to the NSC Newsletter Winter 2019, and the first of our regular updates from the **NanoSafety Cluster Coordination Team** (p2). The updates are aimed at increasing the visibility and transparency of the breadth of NSC activities that projects, Working Groups (WGs) and members can get involved with. You'll find out about the team members and the NSC's current regulatory, industrial, scientific and international reach, as well as upcoming events.

With the launch of three EC-funded projects emphasising risk governance, this issue shines a **spotlight** on the anticipated contribution from **NANORIGO** (p6). Along with GOV4NANO, RISKGONE, and caLIBRAte, NANORIGO will be steering **Working Group G: Regulations & Risk Governance**.

Our regular **project news** section kicks off on the same theme of risk governance, with **caLIBRAte** announcing a key final conference later this year. **NanoFASE** reports on a dynamic few months and includes a glowing tribute to recently retired EU Officer Georgios Katalagarianakis, who has done so much to mould and mentor nanosafety projects. The NSC Community wish Georgios the happiest of retirements! This section also includes updates and contributions from **NanoCommons**, the new LIFE project **NanoEXPLORE**, **PANBioRA**, **BioNanoNet** and **BIORIMA**.

The 'In Other News' section reports from **REACH**, before announcements of training workshops and key events for your diaries, including the **H2020 BIORIMA-GRACIOUS Training School 'Cutting Edge Approaches for the Risk Assessment and Management of Nano-(bio)materials: From the Lab to the Market'** (p17).

If you're cherry-picking through the pages, be sure to check **the list of projects** on p5. If your project isn't there, it isn't on the NSC website, so let us know.

Thank you to everyone once again for your contributions. Please keep your news coming! **Submission deadlines for 2019 are April 15th, July 15th, October 14th**. On behalf of the NSC Dissemination Working Group, we hope you enjoy this issue and thank you all for your continued support. Wishing you all a happy and successful 2019!

Kind regards
Lesley Tobin
news@nanosafetycluster.eu



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www.nanosafetycluster.eu/news/submit-news.html

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www.linkedin.com/groups/EU-NanoSafety-Cluster-7471509



@eunanosafety

Update from the NanoSafety Cluster Coordination Team – January 2019

[Iseult Lynch](#) on behalf of the NSC Coordination team

A new feature of the quarterly Nanosafety Cluster (NSC) newsletters for 2019 will be a brief update from the Coordination Team on what we have been doing, individually and collectively, on behalf of the NSC. The aim of this is to increase transparency in the NSC activities, and provide us with an opportunity to demonstrate the breadth of activities underway within the NSC, that projects, Working Groups (WGs) and members can get involved with.

The 4-member Coordination team consists of [Éva Valsami-Jones](#) (overall NSC coordinator), [Flemming Cassee](#) (lead for **regulatory** engagement), [Andreas Falk](#) (lead for **industrial** engagement) and [Iseult Lynch](#) (lead for **scientific** engagement), supported by Tom Carney ([ACEnano](#)) and Anastasios (Tassos) Papadiamantis ([NanoCommons](#)) in the organisation, minute taking, website development etc. All play an important role in supporting the NSC's internationalisation strategy.

In this first update, we will reflect back on the past year's activities, and look forward to upcoming events, for which more details will be provided (via the NSC website and subsequent newsletters) as they become available. Activities are grouped into the main categories of regulatory, industrial, scientific and overall coordination, with the key NSC coordination team members involved listed, although in many cases, several of us were involved in ensuring the overall success of the activity.

We hope that this update is useful and informative, and look forward to engaging with all NSC projects, members and partners over the coming years. If there are aspects that NSC members are especially interested in hearing more about, do please drop me a line (i.lynch@bham.ac.uk) to let me know, and we can feature a more detailed report on aspects of particular interest in future Coordination team updates.



Image: The Coordination team at work: Face to face meeting in Birmingham, December 2017. From left to right: Flemming Cassee (lead for regulatory engagement), Andreas Falk (lead for industrial engagement), Anastasios (Tassos) Papadiamantis (NanoCommons), Tom Carney (ACEnano), Éva Valsami-Jones (overall NSC coordinator), and Iseult Lynch (lead for scientific engagement)

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Overall Coordination

- The NSC Mid-term review meeting was held in Athens (March 2018) as part of a regular NSC meeting (co-organised with NanoFASE). Following from the review meeting, Éva and the WGs drafted the H2020 mid-term review self-reflection report which was finalised in December 2018. See the final report [here](#).
- 10 Steering group (project coordinators and WG Chairs) teleconferences
- 14 Coordination team teleconferences
- Face to face coordination team meetings in Birmingham (Dec 2017), Amsterdam (June 2018) and Vienna (October 2018).
- To celebrate the retirement of Georgios Katalagarianakis, the NSC dissemination team, led by Claire Skentelbery of NIA, collected and collated a memory book for George “the Book of George”. This was presented to him by Iseult Lynch at the NanoSafe 2018 conference in Grenoble. George was extremely moved by the presentation and the sentiments expressed by all his colleagues and friends from the NSC.



Regulatory

- Flemming has taken on the role of coordinating actions between the NSC projects and the Malta Initiative (MI). The MI was created to support development of modifications of OECD Technical guidelines and guidance documents to accommodate testing of nanomaterials. For this a cross table has been created to identify to which MI project each of the current NSC can contribute. A workshop was organized in October in Vienna to bring representatives from NSC and MI together to identify possible NSC contributions. Flemming is also the NSC representative of the Advisory Board of the MI with Éva as deputy. If your project is working on something of relevance to one of the Malta Initiative projects, or you would like more information, please contact Flemming.
- Éva has represented the NSC at several of the MI meetings in Berlin and the ECHA Nanomaterials Expert group (NMEG) meeting in Helsinki over the last year.
- Flemming, together with Tom van Teunenbroek, launched a new NSC working group (WG) on Regulations and Risk Governance. Each of the new risk governance projects (RiskGONE, Gov4Nano and NanoRIGO) should sign up to participate in this!
- Iseult represented the NSC at the EC High Level Group meeting on the Malta Initiative in Brussels in December 2018 – the risk projects were also present and presented!

Industrial

- Andreas presented the activities of WG – E and subgroup i2L-activities at the NSC review meeting in Athens in March 2018.
- Andreas has been active in supporting the development of the core working group on “Safe chemicals Innovation” (chair: Andrew Nelson) and co-organization of the first f2f-workshop in Vienna (Oct 29th 2018).
- Andreas was also the co-organizer of the Workshop “Safety Aspects in Pilot Lines”, Grenoble (Nov 6th 2018) working to bridge these two communities.

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Scientific

- Iseult was the EU Scientific lead for the 1st International nanoscience Olympiad, held in Iran in April 2018. She was on the overall organising committee, organised the EU competition (November-December 2017) and the logistics for the EU teams to attend the INO in Iran in April 2018 (with excellent support from Andrea Haase and Arno Gutleb). She is contributing to the planning for the 2020 edition, as well as supporting Andrea with organisation of the International Young Researchers conference in Salzburg in September 2019.
- Iseult represented the NSC at the ASEAN meeting on Standardisation for nanosafety in Bangkok March 2018.
- Iseult, Éva, Andreas and Tassos contributed to EU-US Nanoinformatics roadmap 2030, including chapters “9. The Community: Overview of Stakeholders”, “10. The Community: Impact on Stakeholders” and “12. Roadmap as Perspectives Milestones and Pilot Projects”. Tassos took on the huge task of formatting and harmonising the references throughout! The roadmap was published on Nov 15th 2018, and can be accessed [here](#).
- Iseult is also responsible for compiling the NSC compendium – the 2019 edition will be launched in March 2019!

Internationalisation

Several international delegations were organised over the last 18 months or so, including:

- EU delegation to Iran as part of the EU-Asia Dialogue (November 2017) for which the NSC lead was Iseult Lynch who presented an overview of the NSC and its projects & activities, supported by Anastasios Papadiamantis and Andreas Falk. The meeting report can be accessed [here](#).
- EU delegation to South-Africa (December 2017) the organisation of which was led by H2020 project CalibRAte, and where the Coordination Team representative was Flemming Cassee who presented the overview of the NSC and its projects & activities.
- 6th South Korea – EU meeting (Brussels, 16th January 2018) was organised by Iseult Lynch and Jana Drbohlavova (EC) at the UoB office in Brussels, and drafted the meeting report.
- Andreas Falk led the organization of the “2nd EU-Asia Dialogue on NanoSafety”, Vienna (Oct 29th 2018) which was a satellite event to the Industrial technologies conference organised as part of the Austrian presidency. Andreas/Flemming and Iseult/Tassos were also actively involved, as Co-chairs of breakout discussion groups on Social Dialogue and Governance and Scientific Data Collaboration, respectively and Éva as presenter in the main event. The meeting report is available [here](#).
- 8th South Korea – EU workshop on Nanosafety in Seoul, South Korea, organised by Barry Hardy, took place in November 2018, with Tassos attending on behalf of the coordination team. Flemming led the organization of the just-completed EU-Mexico (January 2019) workshop, held in lovely Ensenada, Mexico at the request of the Commission with the aim to get better involvement of Mexican researchers in EU projects on nanosafety. Flemming presented the Nanosafety cluster, while Iseult represented several EU projects (RiskGone, NanoSolveIT and NanoCommons) and Éva represented ACEnano.

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NSC meetings, events and conferences (including upcoming)

- Éva attended the inaugural meeting of the Greek Nanosafety Platform in Athens in July 2018, to offer support and inspiration from the NSC in the early steps of the process.
- Iseult was the scientific lead and provided organisational support & guidance for the organising committee of the 3rd [Young Nanosafety researchers Forum](#) held in Malta in September 2018, plus attended the conference to give the opening and closing remarks and present the awards for best talk and posters. The next NSC Young researchers Forum will be held in 2020, and Iseult will be launching the call for young researchers to form the organising and scientific committees later this year.
- Iseult is supporting the organisation of a NSC event as part of the Romanian presidency of the EU, which will also see the launch of the Baltic Sea region nanosafety platform. The provision dates are 16-18th May 2019 (including a social trip along the Danube), so stay tuned for further details and the formal invitations.
- Iseult is also leading the organisation of the annual NSC conference in her role as coordinator of NanoCommons, in conjunction with EC4SafeNano, NanoSolveIT and NanoInformaTIX, likely to take place in November 2019. Final dates to be confirmed, but the location will be Brussels, and the call for abstracts will be launched in mid February 2019 with all NSC members invited to attend. The theme will be **“Sustainable solutions for nanosafety: Tools, infrastructure and services”**.

NSC links and contact information

The NSC Working Groups

[About](#)

[NSC Dissemination Group](#)

[WG A: Communication, Training and Education](#)

[WG B: Materials and Standards](#)

[WG C: Exposure & Hazard Assessment](#)

[WG D: Models and Tools for Risk Assessment](#)

[WG E: Innovation and Safer by Design](#)

[Industrial Innovation Liaison \(i2L\) \(WGE sub-group\)](#)

[WG F: Data Management](#)

[Participants](#)

[Project Ideas](#)

[Tasks](#)

[WG G: Regulations & Risk Governance](#)

List of Ongoing Projects:

[ACEnano](#)

[Calibrate](#)

[CERASAFE](#)

[EC4SafeNano](#)

[GRACIOUS](#)

[Hisents](#)

[Lorcenis](#)

[ModCOMP](#)

[NanoFARM](#)

[NanoFASE](#)

[NanoGenTools](#)

[NanoREG II](#)

[NanoStreeM](#)

[Necomada](#)

[npSCOPE](#)

[PATROLS](#)

[Pandora](#)

[SKHINCAP](#)

[SmartNanoTox](#)



Spotlight on Risk Governance and NANORIGO

2019 sees the launch of a number of high-profile affiliated EC-funded projects focusing on Risk Governance of Nanotechnology and providing strong support to the NSC [Working Group G: Regulations & Risk Governance](#).

The specific challenges that each of these will address are clearly defined by the EC, which points out that despite significant progress into research regarding the safety of engineered nanomaterials, 'there needs to be further transfer of this knowledge into regulation, and more needs to be done as nanotechnology reaches the market'.¹ 'Transdisciplinary risk governance is required based on a clear understanding of risk, its management practices and the societal risk perception by all stakeholders'.

Each of these new initiatives is looking to develop communication with all stakeholders and civil society to foster user involvement and engagement, and to co-operate with each other

The EC lists the expected Impact:

- A transparent, self-sustained and science-based risk governance council;
- Governance framework tools for managing possible nanotechnologies risks in regard to social, environmental and economic benefits;
- Availability of high quality data for industry and regulators decision making;
- Sustainable solutions demonstrated at a level that will allow both consistent integration of scientific results and regulatory application of scientifically sound concepts;
- Consistency of science based risk management approaches in all EU Member States and synergy with similar actions internationally.

The projects will work, liaise and collaborate closely while supporting the NSC Working Group alongside and extending its reach.

Dr Mark Morrison at [Optimat](#), the dissemination partner for NANORIGO, describes this particular new initiative:

NANORIGO - a Risk Governance Framework and Council for Nanomaterials and Nano-enabled Products

NANORIGO (NANOTEchnology Risk GOVERNance) started on 1st January 2019. Coordinated by Aarhus University and involving 27 other partners from across Europe, this 50 month, €4.7 million project will develop and implement a transparent, transdisciplinary and active Risk Governance Framework (RGF) for manufactured nanomaterials and nano-enabled products. The RGF will be developed through engagement with stakeholders across research, industry, regulation and civil society, and will be based on high-quality scientific data and tools for the physicochemical (pc) characterization of nanomaterials, and the assessment of exposure, hazard and risk for humans and the environment.

To implement the RGF, NANORIGO will develop a sustainable, multi-stakeholder Nanotechnology Risk Governance Council (NRGC) to provide credible, transparent and objective advice to all stakeholder groups.

The NANORIGO consortium will work closely with the two other projects funded under the NMBP-13-2018 call: [RiskGONE](#) and [Gov4Nano](#), to ensure a sustainable and equitable RGF and NRGC is developed for all.

NANORIGO is funded under H2020-NMBP-TO-IND-2018 (Project ID: 814530)

For more information about NANORIGO, contact [Mark Morrison](#)

[Working Group G: Regulations & Risk Governance](#)

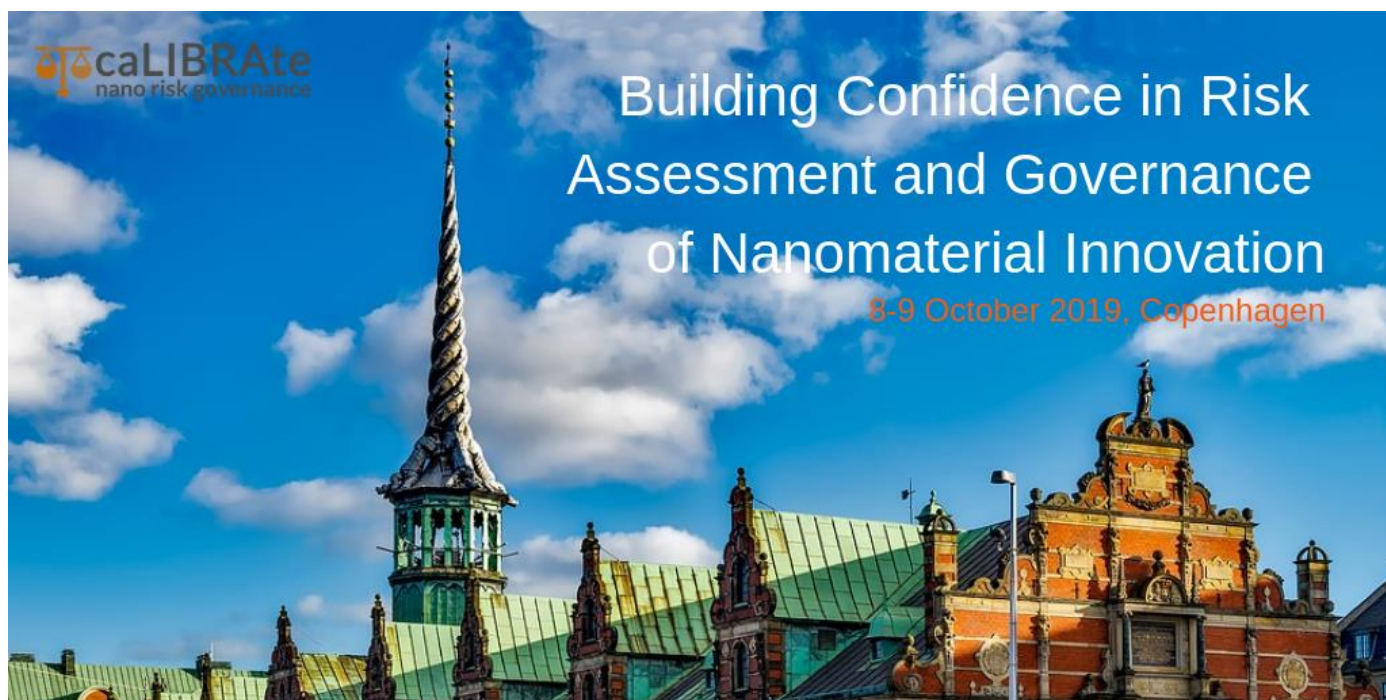
Chair: Tom van Teunenbroek (NL); Co-chair: Thomas Kuhlbusch (D) and Steffi Friedrichs (B)

Projects contributing: GOV4NANO, RISKGONE, caLIBRAte, NANORIGO

¹ http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-leit-nmp_en.pdf

caLIBRAte launches closing meeting ‘Building Confidence in Risk Assessment and Governance of Nanomaterial Innovation’

October 8-9, 2019. Copenhagen



The [caLIBRAte](#) project has developed a web-based nano-risk governance portal with safety guidance, a horizon scanning tool and different tested tools to perform occupational, consumer, and environmental risk assessment and management during innovation, production and use of nanomaterials and products containing nanomaterials. Stakeholders have been surveyed to define stakeholder requirements and understand stakeholders' nanosafety concerns.

Comprehensive work has been made to collect and evaluate existing characterization and toxicological test data on a larger suite of nanomaterials as well as human exposure scenarios. New data has been generated to test toxicological hypothesis and close data gaps to reach a comprehensive set of data to be used for model testing. The nano-risk governance portal is expected to be publically available from September 2019. The closing conference is relevant for researchers, industry, policy makers and regulators who are interested in nanosafety, risk governance as well as nanomaterial and product development. The meeting covers two days, including:

* Day 1: Building Confidence in Risk Assessment and Governance of Nanomaterial Innovation – Introducing key advances in nanosafety knowledge, risk assessment, and the caLIBRAte Nano Risk-Governance portal

* Day 2: caLIBRAte Nano-risk Governance Platform training day – Participants will have the opportunity for direct training for the portal as a whole and its integrated Risk Assessment tools. The aim of this day is to enable participants to select and understand the Risk Assessment tools that suit their needs.

The meeting is free and interested participants can submit an expression of interest to attend. Formal registration will be confirmed once the full agenda is published.

[Click here](#) to submit an expression of interest.

www.nanocalibrate.eu





reports....

Submitted by [Claire Mays](#), Symlog

‘Inching closer to realistic exposure models’ – NanoFASE work highlighted in NATURE NANOTECHNOLOGY

NanoFASE Advisor [Gregory V. Lowry](#) of Carnegie Mellon University informed the *Nature Nanotechnology* community of new modelling capabilities to increase accuracy of environmental exposure concentration estimates and associated risks – centring on a recent publication by NanoFASE’s [Véronique Adam](#) et col. from [EMPA](#).

Current models used to estimate ENM concentration in the environment overestimate the final ENM concentrations, and therefore their probable risk, because they do not consider the physico-chemical transformations ENMs undergo in their environmental journey.

The work presented by Véronique Adam and EMPA coworkers helps to refine Mass Flow Analysis models by determining the probability of a particle having undergone a particular transformation, thus yielding a better estimate of the true masses and forms of particles entering different environmental compartments.

Lowry calls Adam et al.’s particular results on nanosilver transformations ‘intriguing’, and explains both the work’s potential to improve PEC numbers, risk assessment and toxicological insights, and, the limits that should be addressed by such modelling and further research.

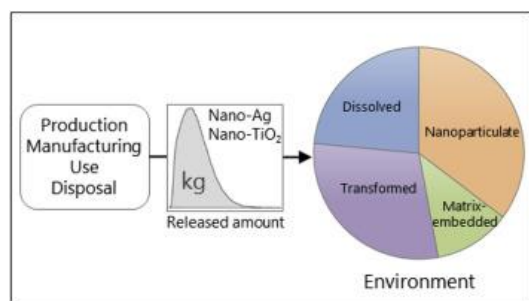


Figure from Adam, Caballero-Guzman & Nowack (July 2018):
<https://doi.org/10.1016/j.envpol.2018.07.108>

Read opinion and analysis by Lowry (November 2018):
<https://doi.org/10.1038/s41565-018-0299-4>

NanoFASE congratulates Prof. Iseult Lynch (University of Birmingham) on performance as Highly Cited Researcher for 2018

Clarivate Analytics recognized world-class researchers who demonstrate exceptional research performance with record production of multiple highly cited papers that rank in the top 1% by citations for field and year in *Web of Science*. See Clarivate’s impact analysis [HERE](#).

Prof. Iseult Lynch heads up NanoFASE’s team dealing with ENM supply, transformation and metrology for experimental studies, and somehow we are not surprised that she stands out among nanoscientists!

Image: Prof. Iseult Lynch



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...cont'd/ [NanoFASE reports](#)

When small is BIG

One of the nicest things that ever happened to NanoFASE was the 8 minutes of unmitigated praise received in March 2018 from Georgios Katalagarianakis, the incomparable EU officer who shaped and drove so many nanosafety projects.

When he retired recently and Cluster members created the 'Book of George', NanoFASE contributed this photo – enshrining George's comment about our 'small project' that we try to make true each day.



Thanks again for all your tough love, Georgios!

NanoFASE at ECHA NMEG Expert meeting on REACH Annexes

In November 2018 NanoFASE's modelling leader Steve Lofts and coordinator Claus Svendsen (NERC) flew in to Helsinki (directly from the NANOSAFE, NSC and the EPPN-NSC i2L joint Workshop on *Safety Aspects in Pilot Lines* in Grenoble).

They joined NanoFASE water/sediments leader Frank von den Kammer (UNIVIE) to provide input to the specific ECHA 'Workshop on supporting the implementation of the REACH information requirements for nanomaterials'. Here the experiences and results from NanoFASE were shared through a plenary presentation and detailed contributions to the Environmental breakout sessions.

Lively discussions - balancing realism, relevance, legislative requirements and feasibility - were had between the ECHA and national regulators, the researchers and the industry representatives, with good progress on the Guidance for the implementation of the REACH information requirements.

We very much look forward to adding further to this process before the final implementation in 2020.

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... cont'd/ NanoFASE reports

A tale of two synchrotrons: NanoFASE dual hemisphere Beam Team reports

NanoFASE Young Nanoscientists Elma Lahive, Amaia Green Etxabe and Sam Harrison (NERC) stayed up very late at both the Australian Synchrotron, Melbourne, Australia and the Diamond Light Source, Harwell, UK.

A key aim of the NanoFASE project is to study the effect of plant–soil interactions on the environmental fate and biotic uptake of nanomaterials from soils into plants and animals, providing information on important processes for incorporation into the NanoFASE [soil–water–organism model](#). To meet this aim, a collaborative effort between teams in WPs 2, 7 and 9 was undertaken. Read here: http://nanofase.eu/news/1761_a-tale-of-two-synchrotrons/ about how they refined interpretations of bioaccumulation experiments, using XAS to determine the speciation of (nano)silver in different soils and investigate the differential effects on bio-uptake in wheat.

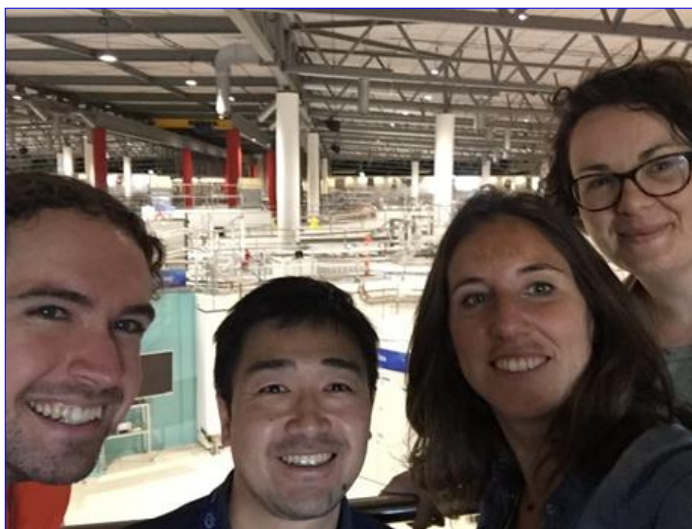


Image: The Beam Team at the Australian Synchrotron with wise guide Dr Ryo Sekine (Griffith University), Nov. 2018



Image: The Australian Synchrotron, Melbourne

Upcoming:

NanoFASE will chair sessions or make major presentations here:

- Coordinator Claus Svendsen at the [NIA symposium](#) on 27 March 2019
- SETAC <https://helsinki.setac.org/>
- We hope to see you in open workshops at our final NanoFASE conference to be held together with ICEENN2019 in Vienna, Austria on September 2-6, 2019.

For more news about NanoFASE, visit <http://nanofase.eu/news>

NanoCommons moves forward towards FAIR data and data innovation



NanoCommons

Nano-Knowledge Community

Following its kick-off in January 2018, the NanoCommons project is moving steadily forward towards building an international nanosafety e-infrastructure containing publicly available data and open tools for data management and semantic annotation, data analytics and visualisation, predictive modelling and more.

NanoCommons is currently preparing for its first call for Transnational Access (TA, see Figure 1), i.e. funded access to the [tools and services](#) offered by NanoCommons to develop tailored solutions for individual user or project's data management needs, to be launched on 11th February 2019. The call will allow successful applicants to take advantage of the NanoCommons tools and services free-of-charge, including help to make their existing data FAIR (Findable, Accessible, Interoperable and Reusable) and to implement data management workflows into their experimental design and data collection processes to facilitate direct integration into relevant databases with all of the require metadata. NanoCommons TA Users will thus become part of a wider attempt at cross-field and cross-data harmonisation, leading to increased data quality and thus better predictive models for nanosafety, resulting in ground breaking insights and novel materials. For more info visit the NanoCommons website (<https://www.nanocommons.eu>).



Figure 1. Overview of the services offered by NanoCommons during its TA.

During its first year of life the NanoCommons consortium have been really active as organisers and/or participants in various events globally promoting the project, its principles and goals. So far, NanoCommons partners have engaged with all stakeholders (academia, industry, regulatory organisations) giving presentations and constantly engaging, looking for new partnerships and potential Users. Hence, NanoCommons partners have joined international EU delegations travelling to South Korea for the 6th Korea-EU Dialogue on Nanosafety and to Mexico for the EU-Mexico Nanosafety Dialogue in January 2019. We also took part as organisers, presenters and/or Chairs during the 2nd EU-Asia Dialogue on Nanosafety and Scientific data collaboration (October 2018, Vienna, Austria) that saw scientists from the EU and the Asia Nano Forum (ANF) coming together to exchange knowledge and discuss future collaborations in all fields of scientific research. NanoCommons is also an active member of the [EU NanoSafety Cluster](#) (NSC) and took significantly contributed to the Horizon 2020 (H2020) midterm review that took place in March 2018 in Athens, Greece.

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...cont'd/ [NanoCommons moves forward towards FAIR data and data innovation](#)

NanoCommons has also engaged strongly with regulators and SMEs during the [EC4SafeNano](#) day (November 2018, Grenoble, France) when it co-organised a workshop on Overcoming barriers to making data FAIR and integrating data management into data generation workflows. The philosophy behind the workshop was that FAIR data is strongly interlinked with data innovation and subsequently with socioeconomic growth, as stated recently in a relevant study titled “[Preliminary analysis: introduction of FAIR data in Denmark](#)” commissioned by the Danish Agency for Science and Higher Education. Furthermore, NanoCommons is actively seeking to assist with the revision of the current OECD guidelines regarding nanosafety (Malta Initiative) and is participating in relevant meetings, including in Vienna in October 2018, and at the High Level Group meeting in Brussels in December 2018, with the intention to assist with data harmonisation, interoperability and analysis via its online notebook platform for data collection from interlaboratory comparisons and through facilitation of access to existing data.

NanoCommons also had a strong presence in various conferences and workshops, including OpenTox Asia (May 2018, Tokyo, Japan) and OpenTox Europe (October 2018, Athens, Greece), the 3rd Nanosafety Forum for Young Scientists (September 2018, Valletta, Malta), the Industrial Technologies Workshop 2018 (October 2018, Vienna Austria) and the NanoSaFe conference (November 2018, Grenoble, France), as well as participating in the 4th International Conference on Research Infrastructures ([ICRI2018](#)) as part of the Austrian presidency of the EU.

Finally, NanoCommons has commenced promoting its training activities, having co-organised with the [OpenRiskNet](#) project two hackathons on data and metadata semantic annotation. The 1st NanoCommons Hackathon on Ontological Annotation of Datasets was organised in October 2018 in Athens, Greece, in conjunction with the 2nd NanoCommons General Assembly, and focussed on teaching the participants the basics of ontologies and was followed by a hands-on workshop where participants used datasets to search through established ontologies (e.g. [eNanoMapper Ontology](#)) for ontological annotations and upload their annotated datasets into the NanoCommons Knowledge Base. The participants also learned how to prepare electronic files (e.g. JSON) containing the raw data and the ontological metadata. The OpenRiskNet-NanoCommons Ontology Meeting took place in December 2018 in Brussels, Belgium and followed the OpenRiskNet General Assembly. The goal of this meeting was to get a picture of the ongoing ontology activities in the (nano)toxicology area, to harmonise these efforts and the developed ontologies therein, and extend the existing (nano)toxicology ontologies to support OpenRiskNet and NanoCommons tasks. This included ontological annotation of OpenRiskNet Application Programming Interfaces (APIs) as used on their cloud, extending the eNanoMapper ontology with missing and complex terms and writing up guidance documents, and annotation of data sets (possible via OpenRiskNet data APIs).

The success of the NanoCommons project is already visible in the numerous requests for targeted training hackathons that have led to newly established partnerships to implement data management and curation workflows and integrate large datasets, including those from the [Center of Sustainable Nanotechnology](#) (Wisconsin, USA), [Hanyang University](#) (Seoul, South Korea) and the [Brazilian Nanotechnology National Laboratory](#).

We are looking forward to an equally busy Year 2, with forthcoming highlights being the calls for Transnational Access (2 per year) and the Nanosafety conference towards the end of the year – look out for the call for abstracts which will be opening later this month! You can follow our updates via Twitter on [@nanocommons](#) and via [LinkedIn](#) our [Facebook](#) pages.

Finally, don't forget to tell us about the tools you would like to see offered from NanoCommons and more, by taking our [short survey](#)!

Successful kick off meeting for the new LIFE project NanoEXPLORE Lancaster

The Life NanoEXPLORE project addresses current data gaps and barriers limiting the implementation of REACH regulation and the use of human bio-monitoring data in the protection of human health and the environment when dealing with particles in the nanometer range. At the project's kick off meeting held in Athens, Greece on 4th October 2018, participants discussed how this goal could be achieved.



By combining long series of robust data on the concentration of engineered nanomaterials (ENMs) measured by a wireless sensor network (WSN) of monitoring devices, appropriate biomarkers, and a tailored designed data management application, this approach addresses current environmental, health and safety questions about ENMs, providing stakeholders from government, industry, NGOs or the general public with reliable data.



The overall aim of LIFE NanoEXPLORE project is to develop and demonstrate the feasibility of an integrated approach to conduct biomonitoring studies, characterise exposure levels and elucidate possible health effects deriving from exposure to ENM in indoor workplaces and urban areas.

The project objectives feature:

- Development a wireless sensor network of 20 unattended, low cost, portable and battery powered monitoring devices
- Development of a web-based data management tool aimed at supporting health surveillance
- Defining and validating a panel of candidate biomarkers of nanomaterial exposure ☑ Risk analysis of possible effects on human health
- Refinement of the current Recommended Exposure Limits for metal oxides and low soluble carbon-based materials
- Validation and demonstration of the feasibility of the NanoEXPLORE approach for the risk assessment of ENMs in Europe.

Dr. Athena Progiou, Director Research and Development of Alcon Consultant Engineers and project coordinator, explains the expected impact of NanoEXPLORE:

“NanoEXPLORE is a challenging project. Our consortium is multidisciplinary, bringing together biologists, medical doctors, physicists, chemists and engineers, and we are all committed to succeed. We strongly believe that the project will have a considerable impact on i) improving and updating current EU policies (REACH, EU Air Quality legislation, SEVESO III etc.), ii) identifying the concentration of ENMs in indoor workplaces and urban areas, iii) providing validated biomarkers to monitor ENMs health adverse effects, iv) contributing to reduce the amount of ENMs released and v) raising awareness regarding ENMs effects on air quality and human health.”

Find out more at lifenanoeexplore.eu.

Project Facts: Project Reference LIFE17 ENV/GR/000285

Duration: September 2018 to March 2022

Total Budget: approx 2,255,000.00 €

Project Partners: Alcon Consultant Engineers Ltd, Greece
National Center for the Environment and Sustainable Development, Greece
Institut universitaire romand de Sante au Travail, Switzerland
Instituto Tecnológico Del Embalaje, Transporte Y Logística, Spain
RAMEM S.A, Spain Università degli Studi di Torino, Italy
Yordas Limited, UK

Contact for Press: Stella Stoycheva, Yordas Group s.stoycheva@yordasgroup.com

PANBioRA Stakeholder Survey is Online

<https://www.panbiora.eu>

Geethu Balachandran. EU-VRI

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PANBioRA aims to develop a rating system, that will allow a broad risk assessment of biomaterials.



Survey for identifying the stakeholder needs and perspectives
"Personalised and Generalised Integrated Biomaterial Risk Assessment"

Are you an expert working in the field of "biomaterials", "implants", "medical devices", "risk analysis", "multiscale modelling", "policies & regulations" or related fields?

Help us develop an integrated risk governance framework for biomaterials and biomaterial based products by participating in the survey! Participate in our survey and receive feedback!

With this survey, stakeholders' needs and perspectives with respect to the development and use of an integrated risk governance framework for biomaterials and biomaterial based products will be identified. The output from this survey will be used in developing a web-tool to enable horizon scanning of "hot spots" and monitoring of risks based on a web-based analysis.

Share your needs and perspectives related to a framework for the risk assessment of biomaterials and biomaterial based products here: http://survey.risk-technologies.com/Survey_Run.aspx?ID=977

We look forward to your contribution!

PANBioRA Risk Analysis and Assessment Team

<https://www.panbiora.eu/news-events/news-details/panbiora-stakeholder-survey-is-online/>

<https://twitter.com/PANBIORA/status/1068409994591252480>

Upload Dissemination material_Survey_v01gb29112018.docx



BioNanoNet Newsletter online now!

Simone Jagersbacher

BioNanoNet ForschungsgmbH

office@bionanonet.at

Besides contributions from BioNanoNet members, reports about projects and activities and an overview of interesting events, the team highlight the BioNanoNet member presentations within this newsletter, which present ...

- ICCRAM – Universidad de Burgos (Spain)
- Luxembourg Institute of Science and Technology (LIST)

https://www.bionanonet.at/images/BioNanoNet_News_2018_04.pdf

BIORIMA Hosts its First Workshop

www.biorima.eu

Lisa Bregoli, Warrant Hub

lisa.bregoli@warrantgroup.it



The first BIORIMA Stakeholder workshop was held in the beautiful city of Valencia on November 6th 2018, titled: **"Towards an Integrated Risk Management Framework for Nano-Biomaterials used in medical devices and advanced therapy medicinal products"**.

"Integration" was the underlying keyword of the meeting, where over 40 participants from the regulatory, industry and academic research fields contributed to the interdisciplinary dialogue and to develop a shared approach for understanding and managing risks of Nano-Biomaterials (NBM) used in medical devices (MD) and advanced therapy medicinal products (ATMP).

The workshop was planned as a forum for sharing knowledge and perspectives on risk assessment and management through all life cycle stages of NBM and represented a unique opportunity to discuss latest regulatory and scientific issues of NBM risk management. During the workshop, the aims and characteristics of the BIORIMA risk management framework were presented, together with an overview of target NBM and their biomedical applications considered in the project.

The proposed strategies for human health and ecological risk assessment, benefit-risk assessment, risk prevention and control of NBMs were illustrated, and different aspects of the framework and its strategies were discussed among participants.

This workshop was instrumental for the BIORIMA project, aimed to develop an overarching framework for risk assessment and management of NBM used in MD/ATMP. The inputs from stakeholders will allow BIORIMA to provide a tool which is truly based on users needs as well as regulatory requirements and scientific knowledge, to SMEs and industrial manufacturers in Europe and beyond.

For further information about the project, please visit our website at www.biorima.eu



Image: Participants at the first BIORIMA Stakeholders' workshop



REACH: Closing the gap for nanomaterials

Commission adopts new registration requirements for nanomaterials under REACH, clarifying how to register nanoforms of substances. The new rules will apply as of 1 January 2020.

http://ec.europa.eu/environment/chemicals/news_en.htm

On 3 December the European Commission adopted the revision of several Annexes of REACH (the EU Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals), clarifying the registration requirements with regard to nanomaterials.

REACH has always applied to nanomaterials, but did not contain specific provisions for them, which is why companies often did not know how to register these ‘substances in nanoform’. The modifications and the new requirements will help closing the knowledge gap on which nanomaterials are placed on the market and in which quantities. They will clarify for the registrants how to provide information on their basic characteristics and use, how to handle them safely, what risks they potentially pose to health and the environment and how these risks can be adequately controlled. The new provisions will have to be implemented for all substances in nanoform that fall within the scope of REACH, from the already widely used and registered ‘legacy’ nanomaterials in all their product grades and variations to the specifically engineered nanomaterials placed on the market by the newly founded SMEs.

The impact assessment preceding the revision of the REACH annexes estimated that compliance with the modified REACH requirements for the registration of substances with nanoforms would cost a total of EUR 1.4 billion. These costs are justified in comparison with the expected health and environmental benefits, also considering the current size of the market and its potential for growth. More detailed information on the presence and perspectives of products containing nanomaterials can be found at the [European Observatory for Nanomaterials](#).

Background:

Nanomaterials are chemical substances in a particular form (hence the newly introduced term ‘nanoform’ of a substance) with features at the “nanoscale” between 1 nm and 100 nm. Some substances only exist in nanoform, others are used primarily in conventional or ‘bulk’ form. Manipulating size, shape and surface properties of particles of a substance at the nanoscale complements its basic chemical properties. The changed properties enable new uses or improve existing uses in many different and innovative ways, for example in catalysis, electronics, solar panels, batteries, in materials science and biomedical applications.

Similar to substances in conventional form, some nanoforms are toxic and others are not. The scientific evidence to date shows no systemic increase in hazard when dealing with nanoforms. It however confirms that there may be important differences in toxicity as well as in their effects and fate in the environment between the different nanoforms or the nanoform and the conventional form of the substance.

Under REACH, the EU’s manufacturers and importers of chemicals have a general obligation to register in the European Chemicals Agency each substance manufactured or imported in quantities of 1 tonne or more per year per company. In the registration dossier, they must identify the risks linked to the substances they produce and market, and indicate how these risks are managed. Ensuring that this safety assessment for substances in nanoform effectively captures and documents also the potential differences between the forms covered by the registration has been the principal objective of the modifications of the REACH annexes. The Regulation supports and will generate information for the European Union Observatory for Nanomaterials (EUON) hosted by the European Chemicals Agency.

More information:

[Commission Regulation](#) and the associated [Impact Assessment Report](#)

[ECHA news](#)

[ECHA guidance on registering nanomaterials](#)

[European Union Observatory for Nanomaterials](#)

H2020 BIORIMA-GRACIOUS Training School



Registration now open for 1st Interprofessional Education Nano Training School

25th March 2019 - 29th March 2019, Venice, Italy

Cutting Edge Approaches for the Risk Assessment and Management of Nano-(bio)materials: From the Lab to the Market: H2020 BIORIMA-GRACIOUS Training School



The training school will take place in Venice (Italy), with the school programme taking place in the historic Auditorium Santa Margherita, located in the heart of the city.

School Purpose

The Nano Training School, co-organised within the EU funded Horizon 2020 projects BIORIMA, GRACIOUS and NanoInformaTIX will take place in the historic centre of Venice, Italy, on 25th – 29th March 2019. The school aims to transfer State-of-the-Art knowledge on a variety of topics from key experts to the new generation of nano-environmental, health and safety, and biomedicine professionals, using **interprofessional education** in hands-on sessions.

Become part of an interactive, exciting week and enrich your knowledge by developing multidisciplinary expertise!

Who should attend?

- Early stage researchers
- PhD students and Post Docs
- Senior researchers
- Industry
- Governmental Agencies
- Medical Personnel
- Anyone interested in Safe Nanotechnology, Risk Assessment and Nano-Medicine

School Topics

- Advanced Nano-(bio)materials' Fate & Exposure Scenarios
- Hazard to Human Health & Environment
- Risk Assessment & Risk Management
- Modelling, Grouping and Read Across Approaches

School registration

Please register with the following link:

<http://www.greendecision.eu/wp/nanotraining-school-registration>

The School is free of charge, and attendees limited to 60. Register for your places early!

Contacts

Scientific enquiries:

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ERANET SIINN NanoToxClass Final Meeting

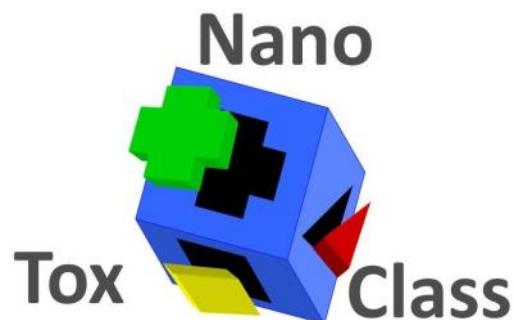
<http://www.nanotoxclass.eu/>

Dr. Andrea Haase: andrea.haase@bfr.bund.de

German Federal Institute for Risk Assessment (BfR)

https://www.bfr-akademie.de/english_int/nanotoxclass.html

The ERANET SIINN project NanoToxClass is establishing nanomaterial grouping strategies according to toxicity and biological effects for supporting risk assessment. The outcome of the NanoToxClass project will be presented during the final public conference on February 14th and 15th at the German Federal Institute for Risk Assessment (BfR) in Berlin, Germany.



Agenda

Day One—14th February

- Session 1: Nanomaterial Grouping- Introduction and Needs
- Session 2: Invited External Talk: Prof. Roland Grafström (Karolinska Institute, Sweden) New developments in toxicogenomics applications
- Session 3: Omics Approaches to support NM Grouping
- Session 4: Invited External Talk: Prof. Ulla Vogel (National Research Centre for the Working Environment, NRCWE, Denmark) Omics as a tool for understanding NM toxicity and for AOP development
- Open Podium Discussion : How to integrate mechanistic data/ Omics data/ AOP concepts into NM grouping? Status Quo & Challenges
-

Day Two—15th February

- Session 5: Case Study TiO₂
- Session 6: Invited External Talk: Dr. Lara Lamon (University Ca' Foscari Venice) Grouping for Read Across of NM to predict in vitro genotoxicity: a case study on nanoTiO₂
- Session 7: Case Study SiO₂

Register here: https://www.bfr-akademie.de/english_int/nanotoxclass.html



Bangkok, Thailand

18 March 2019, Bangkok, Thailand

The EU-Asia Dialogue on Nanosafety is an international event which brings together experts from Asia and Europe. The main purpose of this gathering is to share knowledge with regards to the safety of Nanotechnology, get insights on actual and future human and environmental Nanosafety research, and discuss how to develop them to a thematic collaboration.

The 3rd EU-Asia Dialogue will be held in conjunction with ASEAN summit 2019 hosted by the Ministry of Science and Technology Thailand (MOST) in order to encourage partnership in the science, technology, and innovations developed between ASEAN and its trade partners.

The past two Dialogues were held in Tehran on November 28th, 2017 and Vienna on October 29th, 2018, respectively.



NIA's 8th Annual Symposium

<http://nanotechia.org/activities/nias-8th-annual-symposium>

Nanotechnology Industries Association

office@nanotechia.org

The Nanotechnology Industries Association (NIA) will hold its 8th Annual Symposium on 27th of March 2019 in Brussels. Join industrial producers of nanomaterials, expert service providers, end-users, policy makers and regulators for a day of presentations, discussion and networking. Presentations will cover a wide range of topics including: Nanotechnology in industry 4.0, How to add nano-value to products, Global regulatory and standards update; Regulatory priorities and Managing nano waste.

If you are active within nanomaterials development, you should attend and network with industry, research and policy stakeholders. NIA welcomes companies new to nanomaterials to help them understand successful integration into their processes and you will meet people who can share good practise and expert services.

The event is free of charge for all NIA Members. Non-Members can join us for €200, but if their organization joins within 8 weeks of the Symposium, the €200 fee will be reimbursed (1 reimbursement per organisation).



4th Annual Congress on Nanomedicine & Drug Delivery

The CPD accredited the 4th Annual Congress on Nanomedicine and Drug Delivery will be held from April 04-06, 2019 in Auckland, New Zealand.

The Nanodelivery congress 2019 aim an excellent opportunity to demonstrate your latest technologies and services and to communicate with a very targeted audience of researches in the continuously growing field of nanomedicine, Novel drug delivery systems, nanoparticles, Nanobiology, Nanotechnology Nanomedicine and Nanobiotechnology's, Biomedical Engineering, Vaccine Delivery, Drug Release Technology, Biotherapeutics technology, and related disciplines.

<https://nanomedicine.annualcongress.com>

Contact: Ethel Ayler, ethelayler2018@gmail.com

Nanodelivery Congress 2019



NDC 2019

April 04-06, 2019 Auckland, Newzealand

World Nanotechnology Conference

April 15-17, Dubai

Magnus Group takes prodigious pleasure to invite you to participate in the 'World Nanotechnology Conference' scheduled on April 15-17, 2019 in Dubai, UAE.

On this prosperous occasion, our committee takes immense privilege to invite the participants from all over the world to take part in this conference with the theme "Presenting Excellency of Nanotechnology to transform the World". The conference aims to review their knowledge, experience and share new ideas amongst the professionals, Industrialists and students from research areas of Nanoscience and Nanotechnology and take active part in the interactive discussions and technical sessions at the conference. The conference also provides a space for the companies and the institutions to present their services, products, innovations, innovative ideas and research work & results.

Scope of the Congress: World Nano 2019 will furnish you on the latest trends and keeps you up to date on the newest advances in Nanotechnology.

A unique aspect of the event is to emphasize research and clinical practice that include Nanobiotechnology, Nanomaterials, Nanomedicines and many more offering deeper coverage of interventional procedures for those in the field of Nanoscience.

<https://worldnanotechnologyconference.com>

Contact: Robert Hensley, Magnus

Contact Email secretary@magnusconf.org

World Nanotechnology Conference

APRIL 15-17, 2019
DUBAI, UAE

*Theme: Presenting Excellency of
Nanotechnology to transform the World*

World Chemistry Forum 2019 (WCF-2019).

Nano Science and Technology Forum Parallel Forum

May 22-24, 2019 in Barcelona, Spain.



Honorary Chairmen giving keynote speeches:

Dr. Gabor A. Somorjai (Professor, University of California at Berkeley, USA)

Dr. Francesc Illas (Professor, University of Barcelona, Spain)

Main topics

1. Nanochemistry
2. Advanced and Smart Nanomaterials
3. Nano-Biomaterials and Nanobiotechnology
4. Application of Nanomaterials and Nanotechnology
5. Nano-Fabrication, Characterization and Nanoengineering
6. Nanoelectronics, NanoOptics, NanoPhotonics and Nanomagnetism
7. Nano Devices
8. Nanomedicine
9. Nanotechnology in Energy & Environment



Keynote presenters include,

Dr. Gabor A. Somorjai, Professor, University of California at Berkeley, USA (**Honorary Chairman** of WCF-2019)

Dr. Francesc Illas, Professor, University of Barcelona, Spain (**Honorary Chairman** of WCF-2019)

Dr. Hans-Peter Steinrück, Professor, University of Erlangen-Nuremberg, Germany

Dr. Ulrich Mueller, Senior Vice President - Executive Expert Zeolite Catalysis, BASF SE, Germany

Dr. Francisco Zaera, Distinguished Professor, University of California, Riverside, USA

Dr. Christof Woll, Professor and Director of Institute for Functional Interfaces, Karlsruhe Institute of Technology, Germany

Dr. Gyula Palyi, Professor, University of Modena and Reggio Emilia, Italy

Dr. Oleg L. Figovsky, Professor and Founder, Polymate Ltd - Israel Research Center, Israel

Dr. M. Samy El-Shall, Professor and Chair of Chemistry Department, Virginia Commonwealth University, USA

Dr. Jean-Marie Maurice Basset, Professor, King Abdullah University of Science and Technology, Saudi Arabia

Dr. Mostafa Ronaghi, CTO and SVP, Illumina, USA

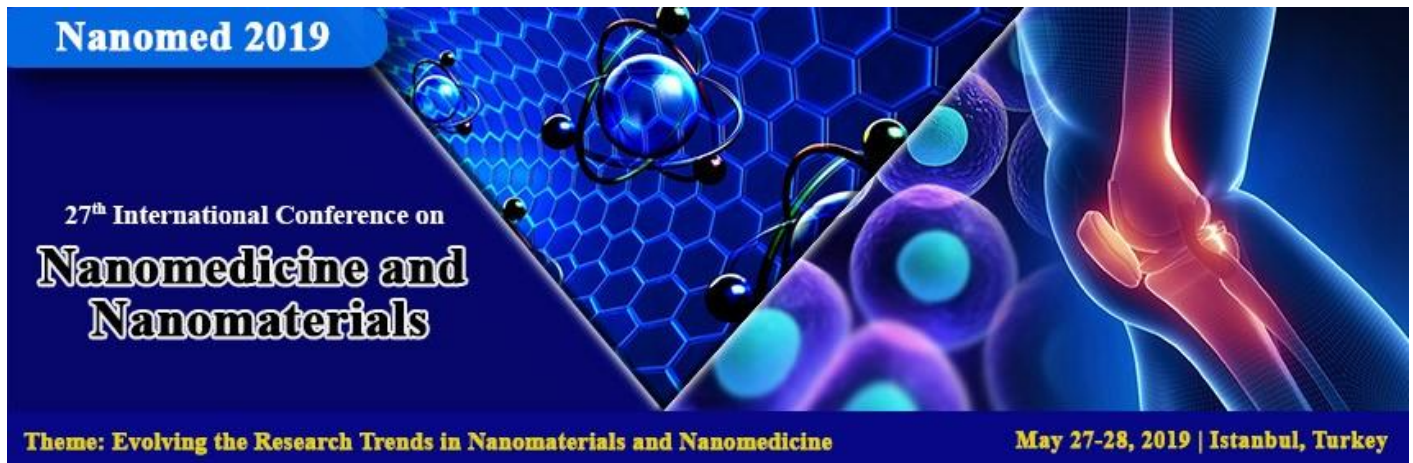
Dr. Miguel A. Castillo Acero, VP Technology Development, Aernnova Group, Spain

Dr. Ulrike Diebold, Professor, Institute of Applied Physics, TU Wien, Vienna, Austria

About ICN2

The Institut Català de Nanociència i Nanotecnologia, with its official English translation Catalan Institute of Nanoscience and Nanotechnology and acronym ICN2, is a non-profit international research institute located close to Barcelona, Spain. Its research lines focus on the newly-discovered physical and chemical properties that arise from the behaviour of matter at the nanoscale.

<https://icn2.cat/en/about-icn2>



27th International Conference on Nanomedicine and Nanomaterials

Nanomed 2019 aims to bring together leading academic scientist, researchers and research scholars to share their knowledge, experience and research on the parts of nanomedicine and nanomaterials. This event will provide an international platform to scientist, researchers and to the students of nanomaterials to discuss the recent innovations and inventions.

<https://nanomaterials.nanotechconferences.org>

Contact: Barbara Dennis: nanomed2019conference@gmail.com

Abstract submissions: <https://nanomaterials.nanotechconferences.org/abstract-submission.php>

Nanotech France 2019

Dr Malika Ardhaoui, info@setcor.org

Nanotech France 2019, the 5th edition of the international conference and exhibition, brings together leading scientists, researchers, engineers, practitioners, technology developers and policy makers in nanotechnology to exchange information on their latest research progress and innovation.

Participants from the top international academic, government and private industry labs of different disciplines participate in Nanotech France 2019 to identify new technology trends, development tools, product opportunities, R&D collaborations, and commercialization partners. It is an excellent event for students to meet and discuss with lead researchers. The conference provides an unprecedented opportunity to discover innovation in the area of nanotechnology and new business opportunities. It is among the most important events in terms of international regulatory policies and it is open to the participation of private companies.

The conference covers all frontier topics in nanotechnology. The conference includes plenary lectures, Keynote lectures and invited talks by eminent personalities from around the world in addition to contributed papers both oral and poster presentations.

The Nanotech France 2019 conference topics include:

- Advanced Nanomaterials
- Nanomaterials Fabrication, Characterization and Tools
- Nanoscale Electronics
- Nanotech for Energy and Environment
- Nanotech in Life Sciences and Medicine
- Nanotechnology safety
- Nano Applications

<https://www.setcor.org/conferences/Nanotech-France-2019>



EuroSciCon Conference on Nanotechnology

<https://nanotechnology.euroscicon.com>

EuroSciCon Conference on Nanotechnology” takes place from July 08-10, 2019 in the city of Prague, Czech Republic

Delegates and speakers from industries, research institutes, academic universities, associations and societies will be attending.

For more details: - <https://nanotechnology.euroscicon.com>

Alicia Harper, EuroSciCon Ltd
nanotechnology@nanoeuroscicon.com



NANOCON 2019 - 11th International Conference on Nanomaterials - Research & Application

<https://www.nanocon.eu>

Venue: Hotel Voronez I, Krizkovskeho 458/47, Brno, Czech Republic, EU.

Date: Oct 16-18, 2019

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 and energy will be accentuated in the XI. 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:

- A – Nano for Electronic, Magnetic and Optic Applications. Carbon Nanostructures, Quantum Dots;
- B – Industrial & Environmental Applications of Nanomaterials;
- C – Bionanotechnology, Nanomaterials in Medicine;
- D – Monitoring and Toxicity of Nanomaterials;
- E – Advanced Methods of Preparation and Characterization of Nanomaterials.

As part of the poster session the Best Poster Contest will be announced. The first three winners and five honorable mentions will be awarded.

Katerina Sedlackova, TANGER Ltd.

ksedlackova@tanger.cz

General information e-mail: info@nanocon.cz



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



Engage with the NanoSafety Cluster...

Do you have any news ♦
announcements ♦ events ♦ resources
♦ research positions ♦ updates ♦
comments ♦ opinions ♦ publications ♦
bulletins ♦ blogs ♦ workshops ♦ ideas
♦ jobs ♦ proposals ♦ partnership
opportunities ♦ that you want the
nanosafety community to know about?

**Here's how you can inform
everyone....**



EventsCalendar



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NewsLetter



NSC Compendium

www.nanosafetycluster.eu