



Welcome to the Summer 2019 issue of the NSC Newsletter bringing you the latest news, updates and developments from a wide range of NanoSafety initiatives.

Before delving into this issue, on behalf of the WG A for Education and Dissemination, [Arno Gutleb](#) is welcoming new members to its recently established linked In group at <https://www.linkedin.com/groups/8695507/>. Sign up and find out about new training opportunities

And in case you missed the announcement in the last issue, the NSC has launched an [Open Access Community on Zenodo](#), where you can find the public NSC outputs and access NSC related publications and public projects deliverables as well as the NSC Newsletters and Compendiums of projects. <https://zenodo.org/communities/nsc>.

And now for the updates: Our [NSC Project News](#) section begins with a [Focus on PARTIAL-PGMs](#) – a new initiative looking at an integrated approach for the coherent development of smart and innovative nanostructured automotive post-treatment systems. This will eventually lead to the development of 2nd gen Gasoline Particulate Filters. And as one project starts, others conclude: the [caLIBRAte project](#) presents its plans for its closing conference and the publication of a portfolio of factsheets; [NanoFASE](#) announces its concluding conference at [ICEENN 2019](#); and [OpenRiskNet](#) hosts its final workshop in Amsterdam in October.

We also have news of a number of further collaborations between projects, including [PATROLS and CITYCARE](#); and then a [MODCOMP, SMARTFAN, REPAIR3D](#) liaison at ENF 2019 in Bucharest. In an update from our Risk Governance projects, [NANORIGO](#) reports on the first 6 months' activities, followed by news of the 1st Joint [Gov4Nano-SAFeRA](#) Workshop.

In our Events section on p23, the NanoSafety Cluster is pleased to announce 4 days dedicated to [“Building confidence in risk assessment and governance of Nanomaterial Innovation”](#) in Copenhagen, October 2019. The 4-day event kicks off with the [caLIBRAte final workshop](#) focussed on current knowledge and future outlook on stakeholder risk perception and information needs and nanosafety data availability.

We hope you enjoy this edition and would like to thank everyone who has supported and/or contributed to it. **The deadline for submissions for the next newsletter is October 14th.**

Kind regards
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Focus on PARTIAL-PGMs

Novel Non-Toxic and Low CRM Nanocatalysts for Automotive Emissions

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PARTIAL-PGMs proposes an integrated approach for the coherent development of smart and innovative nanostructured automotive post-treatment systems by integrating TWCs on GPF, capable to meet future regulations, with reduced PGMs and REEs, leading to development of 2nd generation GPFs.

To date, three way catalytic converters (TWCs) have been established as the most effective engine exhaust after-treatment system. However, TWCs not only fail to address the issue of particulate matter (PM) emissions but are also the main industrial consumer of Critical Raw Materials (CRMs) mainly Platinum Group Metals (PGMs) and Rare Earth elements (REEs), with the automotive industry accounting for 65%-80% of total EU PGMs demand. Moreover, the enforcement of new limits on PM emissions (EURO 6d/7) will require higher TWC performance, hence leading to further increase the CRMs content in autocatalysts.

Addressing the necessity of CRMs reduction in catalysis, PARTIAL-PGMs proposes an integrated approach for the rational design of innovative nanostructured materials of low PGMs/REEs content for a hybrid TWC/ Gasoline Particulate Filter (GPF) for after-treatment systems with continuous particulates combustion also focusing on identifying and fine-tuning the parameters involved in their preparation, characterization and performance evaluation under realistic conditions.

The consortium presents optimum expertise and complementary capacities including <http://www.warranthub.it/> as coordinator, and the following partners: <http://www.demokritos.gr/?lang=en>, <https://matthey.com/>, <https://www.univ-lille.fr/>, <https://www.ntua.gr/en/>, <https://www.unipd.it/>, <https://www.uantwerpen.be/en/>, <https://www.tue.nl/en/>, <https://www.liqtech.com/>, <https://www.birmingham.ac.uk/index.aspx>, <https://lurederra.es/en/>, <https://www.vscht.cz/>, <https://www.udel.edu/> and <http://www.eambientegroup.com/it>



Image caption: Consortium members at the recent 36M meeting, Lurederra Technology Centre (Spain)

In more detail, the rational synthesis of nanomaterials to be used in these hybrid systems will allow for a reduction of more than 35% in PGMs and 20% in REEs content, either by increasing performance or by their replacement with transition metals.

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[...cntd/ Focus on PARTIAL-PGMs](#)

PARTIAL-PGMs approach is broad, covering multiscale modelling, synthesis and nanomaterials characterization, performance evaluation under realistic conditions as well as recyclability, LCA and health impact analysis. In fact, regarding this last point, the consortium has been very active in controlling nanosafety issues, making a complete assessment including different toxicological studies involving the best nanoparticle compositions developed within the project.

In this sense, the first study¹ (led by Eindhoven University of Technology) was related to a material considered both support and catalytic promoter, ceria nanoparticles (CeO₂). Concretely, a set of CeO₂ nanoparticles prepared by different methods were tested, yielding different morphologies, aspect ratios, and surface properties, including a sample prepared by one of the key technologies of the project, Flame Spray Pyrolysis (FSP). **The FSP-made sample showed a remarkable small particle size, which is often considered to be linked to toxicity and unexpectedly, this sample did not show any negative interference with A549 or MRC-5 lung cells, and neither did the hydrothermally prepared samples, regardless of morphology and aspect ratio.** Thus, the potential of CeO₂ nanoparticles to be used in many applications linked with the PARTIAL-PGMs project, implied positive sub-toxic results.

Secondly, PARTIAL PGMs, after exhaustive modelling and small-scale trials, concluded that the most suitable low PGMs/REEs compounds which could address the problem of the project were perovskites composed of Lanthanum (La), Calcium (Ca), Iron (Fe) and Copper (Cu) metals in different proportions.

Apart from composition itself, the main production technologies from the project were compared, involving Flame Spray Pyrolysis (Lurederra Technology Centre –with a CENARIOS® Nano Risk management module implemented) and Co-Precipitation method (Johnson Matthey). In this sense, a cytotoxicity test was performed in vitro by the National Centre for Scientific Research in Athens, against various human cell models representing the most important nanoparticles target organs such as lung, gut, kidney, prostate, etc. The perovskite samples were administered to DU145 human prostate adenocarcinoma cell line, A549 human lung carcinoma cell line, A498 human kidney carcinoma cell line and Caco-2 human colorectal adenocarcinoma cells that were employed as prostate, lung, kidney and gut epithelial models, respectively.

The Perovskites were produced at large scale by the aforementioned two methods, being not toxic for concentrations up to 0.5 mg/mL on all tested models (survival > 80%) for the FSP method; and being non-toxic for concentrations up to 0.2 mg/mL on all tested models (survival > 70%) for the Co-Precipitation method. Also, as shown in the following graphics, the same Perovskites loaded with a low amount of a PGM metal such as Rhodium (Rh) or Palladium (Pd) produced by FSP and Co-Precipitation were submitted to the same cytotoxicity test and were found to be non-toxic on prostate, lung, kidney and gut epithelial models.

¹ Eur. J. Inorg. Chem. 10.1002/ejic.201700248

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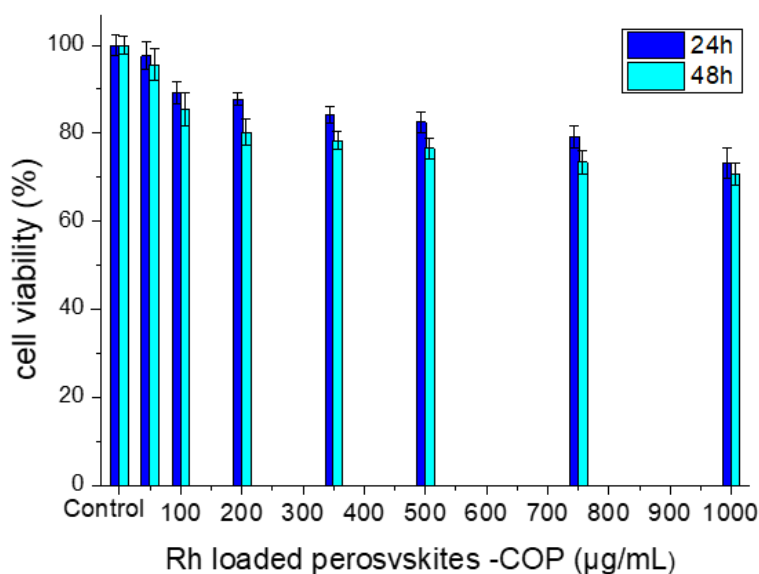
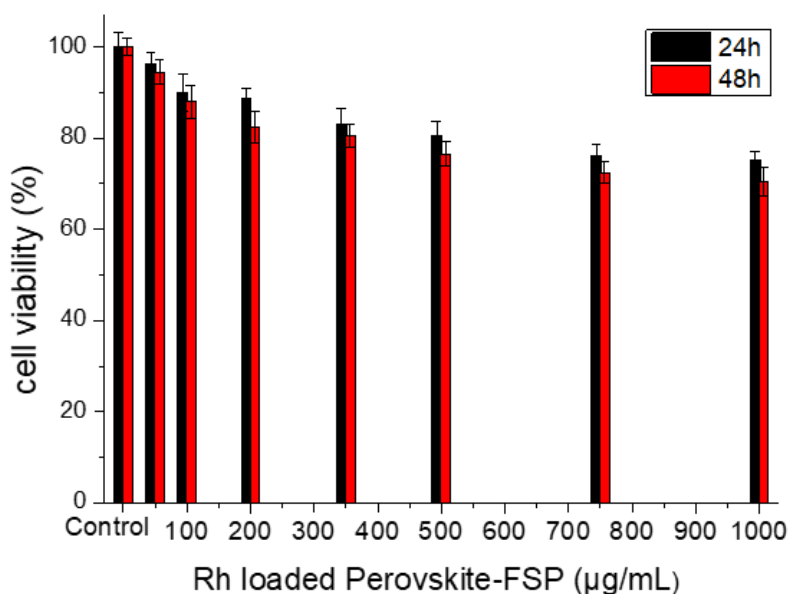


Image caption: Comparative toxicities of Rh loaded perovskites prepared by spray flame pyrolysis (FSP) and co-precipitation (COP) on A498 human kidney cancer cells following incubation at various concentrations for 24 and 48 h as determined by MTT assays

For all this, it can be concluded that the novel nanomaterials selected and developed in the PARTIAL-PGMS project are non-toxic in relevant concentration after the specific assessment by *in vitro* prostate, lung, kidney and gut epithelial models. Thus, PARTIAL PGMs project, apart from the successful results regarding catalytic efficiency, has been very aware of the health impact analysis, carrying out specific studies as well as specific toxicological assessments, obtaining appropriate results in terms of human health analysis.

The project leading to this application has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 686086.

News from caLIBRAte

caLIBRAte Closing Conference: Risk assessment and Governance

As part of the NanoSafety Cluster Week, the caLIBRAte project is pleased to host its closing conference, with two events dedicated to Risk Assessment and Governance which are free to attend.

- October 7: caLIBRAte final conference on risk assessment and governance
- October 10: caLIBRAte NanoRisk Governance Portal training

Who should attend?

Nano risk governance: All stakeholders interested in risk governance and learning more about use of the caLIBRAte Nano Risk Governance Portal



For full details of the NanoSafety Cluster Week and registration, see the main feature in the conferences section of this Newsletter and visit:

<http://nanocalibrate.eu/nanosafety-cluster-week>

caLIBRAte publishes portfolio of factsheets on Risk Assessment and Governance

The caLIBRAte project is pleased to publish a portfolio of factsheets associated with its research towards the nano Risk Governance Portal and Risk Assessment tool maturation.

Factsheets address all aspects of the caLIBRAte project and included 15 publications in July 2019. These include:

- Criteria for human exposure, hazard, risk assessment models
- Stakeholder needs and perspectives for development of a nano-risk governance framework
- Comprehensive analysis of available tools and methodologies for Horizon Scanning
- Current hazard, exposure and (integrated) HRA models considered for input requirements and applicability at the Cooper innovation stage-gates defined
- Prioritization of innovative hazard exposure and risk assessment models towards stage-gate application
- Selecting environmental hazard, exposure and risk assessment models at different stage-gates
- Do environmental model organisms exposed to nanoparticles exhibit a common toxicological response?
- Quality criteria for data within nanomaterials assessment
- Identification of data sets for risk governance tool performance testing
- Exposure scenarios and data for performance testing of human and environmental risk assessment tools: Inventory and analysis of existing case studies
- Human exposure and and environmental release data for models performance testing
- Compilation of suitable value chain case studies for demonstration of the caLIBRAte Nano Risk Governance Portal
- Input requirements and data formats of Nanomaterials risk assessment tools
- Input value sensitivity of Nanomaterial risk, exposure and hazard assessment tools

All factsheets can be accessed via the caLIBRAte website through its 'Results' page: <http://nanocalibrate.eu/results>

PATROLS and CITYCARE join forces

Sharing knowledge and expertise in 3D cell culture models

On the 8th and 9th of July, the workshop on 3D cell culture models was being held at the Adolphe Merkle Institute in Fribourg, Switzerland. We were very pleased to welcome 17 participants coming from all over Europe, having various backgrounds and expertise working in both an academic or industrial setting.



Prof. Dr. Barbara Rothen-Rutishauser started the workshop on Monday morning presenting an overview on the background of advanced 3D cell culture models and their applications. Then results related to modelling lung tissues and several exposure techniques for workshop participants presented these models. The last theoretical part included a presentation on skin tissues given by Dr. Helena Kandarova, who shared the past and present studies on skin models and her vision for the future of skin models. Dr. Davide Confalonieri presented a skin model based on using a system from LonzaPharma and Biotech, which was later demonstrated in the lab.



In the practical part, the participants were offered four different laboratory modules, where they received a demonstration of the co-culturing techniques, including hands-on training. The four modules were I) cultivation of skin, II) lung and intestine tissues, III) monocyte isolation from human peripheral blood and IV) a demonstration of nanomaterial aerosolization techniques within different air-liquid interface exposure devices. In addition, the participants were introduced to life cell imaging as a possible tool in combination with Vybrant dyes to detect the single cell types within a co-culture.

To conclude, we had a great event and received positive feedback about the workshop. Our participants were eager to learn and showed a high motivation to discuss their research, which resulted in a friendly and open atmosphere during the workshop.

This workshop has been supported by the CITYCARE project, which has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 765602 (<https://www.citycare-itn.eu/>); by the European Union's Horizon 2020 research and innovation programme, PATROLS - Physiologically Anchored Tools for Realistic nanOmateriAL hazard aSsessment, under grant agreement No 760813 (<https://www.patrols-h2020.eu/>); and the Adolphe Merkle Foundation



MODCOMP, SMARTFAN, REPAIR3D

<http://modcomp-project.eu/>
<http://www.smartfan-project.eu/>
<http://www.repair3d.net/>

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NTUA attended the EuroNanoForum 2019, that was held in Bucharest, 12-14 June 2019, presenting three projects of the NSC Cluster which are dealing with (nano)composites materials, namely MODCOMP, SMARTFAN and REPAIR3D. The three projects were combined in a poster, under the title: Composite materials circular economy. The case of green fibres and nanoenhanced fibrous polymer composites.

Science and Technology are pushing the boundaries, aiming to design composites structures by carbon fibers (CFs) and reinforced nanomaterials, through environmental friendly processes, with reduced cost and improved mechanical properties. New approaches are necessary to be developed based on chemical modification and functionalization of CFs and nanoadditives. This requires novel techniques that introduce the challenge of reinforcing material production from “green” precursors and manufacturing of fibre-reinforced composites via ecofriendly-production methodologies.

In this context, CFs production, matrices modification with nanoadditives, hybrid materials, smart structures, surface/interface functionalization, manufacturing and processing, pilot and upscaling, as well as green and low cost materials, together with recycling topics, are considered. In addition, development of innovative reclamation and repurposing routes for the end-of-life of fibre-based composites in on the scene, taking into account the nanomaterials included in the composites. The engagement of the above three projects with NSC offers the ability to address all safety issues that arise with the use of nanomaterials in the composites structures developed within the projects. New methodologies for testing nanomaterials toxicity can be applied to the composites, in order to ensure the safety use of nanoenabled composite structures within the value chain.

Image Caption: Composite materials circular economy. The case of green fibres and nanoenhanced fibrous polymer composites.
 Image Credit: National Technical University of Athens (R-NanoLab)

EuroNanoForum 2019

Composite material circular economy: the case of “green” fibres and nanoenhanced fibrous polymer composites

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Science and Technology are pushing the boundaries, aiming to design composites structures by carbon fibers (CFs) through environmental friendly processes, with reduced cost and improved mechanical properties. After long research, a growing industry with multitude applications has been established and the need of new precursors has been revealed. New approaches are necessary to be developed based on chemical modification and functionalization of CFs. This requires novel techniques that introduce the challenge of CFs production from “green” precursors and manufacturing of fibre-reinforced composites via ecofriendly-production methodologies. In addition, development of innovative reclamation and repurposing routes for the end-of-life of fibre-based composites is on the scene.

In order to accelerate the implementation of a circular composites economy, a suitable policy framework needs to be put in place, via updating policies and regulations, promoting interregional initiatives, increasing the use of recycled materials, prioritizing design and aligning common strategies.

Functional magnetic NPs provide adhesion to thermoplastic polymeric matrices and facilitate End-of-Life (EoL) separation and reuse of CFs. Magnetic NPs provide effective reclamation of CFs through local melting of the thermoplastic matrix.

Novel & ecofriendly CF precursors from renewable resources (e.g. lignin)

The first step to achieve the “green” goal set by the global restrictions of using petroleum products was the investigation of possible ways for the manufacturing of CFs exploiting common, low-cost commercial polymers and recyclable raw materials, such as lignin. The achievements show the manner in which the production of “green” CFs can be scaled up and become industrialized.

Recycling by Design (RbD) with functionalisation of CFs with magnetic nanoparticles

Epoxy-based nanocomposites containing conductive carbon nanostructures are developed and evaluated as piezoresistive or piezoconductive sensors. Surface chemical modification increases dispersion and creates stronger interfaces with the polymeric matrix, to guarantee an efficient balance between electrical, thermal and mechanical properties in the final composite.

Cost efficient production processes for CFs and CFRPs

A semi-industrial continuous pilot line for CF production has been developed for transferring a lab/pilot-scale production to large-scale, through cost-effective processes.

Smart nanomodified composites with self-morphing, self-sensing properties

Functionalisation and “smart” sizing of CFs surface with nanomaterials

Direct grafting of carbon based nanomaterials on the fibre’s surface by chemical vapour deposition (CVD) method, for improving fibre/matrix interface properties.

Main aim: To develop 3D printing materials from recycled resources - carbon fibre reinforced plastics.

- selection of suitable waste streams
- compatibilisation and upgrade towards AM processing
- compatibility between matrices, reinforcing CFs & nanoparticles
- assessment of AM thermoplastic technologies
- closed-loop material optimisation in terms of processability and performance.

Practices of interest for electronics, aviation and automotive industry have been addressed during the last years, proving that EC provided a consistent strategic plan with NMBP Programs, offering regularity, stability and continuity in composites research.

This work has been partially supported by the EU Horizon 2020 Programmes: MODCOMP (GA No 695844), SMARTFAN (GA No 760729) and REPAIR3D (GA No 814188).

NANORIGO – the First Six Months

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A lot has happened in the first six months of [NANORIGO](http://www.nanorigo.eu). We are one of three projects developing a risk governance framework (RGF) and risk governance council (NRGC) to support decision-making around potential risks associated with engineered nanomaterials and the products containing them.

NANORIGO is working with [Gov4Nano](http://www.gov4nano.eu) and [RiskGONE](http://www.riskgone.eu) (all funded under the H2020 NMBP-13 call) to ensure that a sustainable and equitable RGF and NRGC are developed for Europe. All three projects' DoAs have been shared to identify areas for synergy, with coordinators and work package leaders meeting in Amsterdam in early June to discuss a coordinated approach. As a result, a number of cross-project working groups on different activities have been established, and these groups are in regular dialogue regarding developments and plans.

Stakeholder engagement is a core aspect of all three projects, and necessary to inform and shape the RGF and NRGC. This is being managed by an inter-project stakeholder coordination group, which met in Brussels in May to discuss key activities within each project that involve stakeholders. There is now a unified approach to stakeholder engagement, ensuring that stakeholders will not be over-burdened with requests to contribute or participate in work, and that their involvement maximises impact for all three projects and ultimately the RGF and NRGC. This group meets on a regular basis to review progress.

NANORIGO partners are progressing well with completion of several deliverables and milestones including on data reuse (retrieval) and dissemination and communication. Work towards other deliverables is well underway, in collaboration with the other two projects where appropriate.

In addition, NANORIGO joined other NanoSafety Cluster projects at EuroNanoForum in Bucharest between 12th and 14th June. There were three presentations by NANORIGO partners:

- Isabel Rodríguez-Llopis (HAIKER) on 'Safety and sustainability assessment in Safe by Design in NanoReg2'
- Cesar Merino-Sánchez (Grupo Antolin) on 'NanoReg2 Safe by Design industrial case study: carbon nanofibers production by CVD floating catalyst method'
- Marie-Valentine Florin (IRGC, EPFL) on 'Do we need a framework for the governance of nanotechnology-related risks?'

Monique Groenewold (RIVM), coordinator of Gov4Nano, gave a joint presentation on behalf of the three NMBP-13 projects 'Risk Governance of Nanotechnology: H2020 Collaboration'.

In the next period, NANORIGO along with the other NMBP-13 projects will begin constructive engagement with stakeholders, and will be attending upcoming NanoSafety Cluster meetings, including one in Copenhagen 7th to 10th October.

For further information, please contact the coordinator at nanorigo@bios.au.dk

- **Twitter:** https://twitter.com/EU_NANORIGO
- **LinkedIn:** <https://www.linkedin.com/groups/12232026/>
- **Website:** www.nanorigo.eu

About NANORIGO

NANORIGO has received funding from the European Union's Horizon 2020 Research and Innovation programme, under the Grant Agreement number 814530.



1st Joint Gov4Nano-SAF€RA Workshop

The workshop aimed to set out the first round of Joint Calls on topics of nano-safety. The workshop was hosted by the Austrian Federal Ministry of Austria - Transport, Innovation and Technology (BMVIT) - Alexander Pogany.

A principal agreement has been reached whereby experts from Gov4Nano will develop the call topics in cooperation the ERA network SAF€RA, which has the expertise in managing and running calls and which will organize funding from the Member States. The Joint Calls are expected to be opened in participating countries in the spring of 2020; they will be administered in collaboration with SAF€RA.



The Gov4Nano Project (i.e. “Gov4Nano - Implementation of Risk Governance: meeting the needs of nanotechnology” (EU H2020), <https://www.gov4nano.eu/>) and the SAF€RA Partnership (i.e. “SAF€RA - A partnership between 21 research funding organisations from 10 European countries, who collaborate on research programming and launch joint calls in the field of industrial safety”, <https://www.safera.eu/>) have teamed up, in order to support structured research collaborations on regulatory relevant nano-safety research topics.

During a recent workshop NanoSafety Cluster (NSC) representatives were invited to express their view on the research needs based on the old NSC research roadmap and their ideas on how to update this. Additional evidence came from a recent workshop held in Boston, USA (see previous newsletter) and the experts’ own assessment.

After Flemming Cassee presented the structure, role and activities of the NanoSafety Cluster and the outcomes of the US-EU research needs workshop from March 5-6 in Boston, the following presentations were delivered:

- Exposure Assessment of Nanomaterials - Wouter Fransman
- Materials & Standards for Nano-Safety Research - Willie Peijnenburg
- Human (in vivo) Toxicology Research for Nano-Safety - Ulla Vogel
- Human (in vitro) Toxicology Research for Nano-Safety - Martin Clift
- Eco-Toxicology (& environmental Exposure) Research for Nano-Safety -Willie Peijnenburg
- Data-Collection and -Management for Nano-Safety Research - Iseult Lynch
- Risk Governance and 'Safe by Design' for Nano-Safety - Monique Groenewold

Steffi Friedrich subsequently led the discussion on the prioritization of research topics funded via SAF€RA, including (i) exposure assessment, (ii) data-management (incl. quality, storage, accessibility), (iii) environmental toxicology, (iv) human toxicology, (v) governance (incl. Safe by Design)).

The meeting delegation of funding organizations and SAF€RA members agreed on focusing on an overarching theme of safety concerns that arise from electrical energy storage containing nanomaterials. The individual topics listed under this overarching theme have subsequently been discussed by the SAF€RA consortium; the consortium agreed to set up joint calls of specific topics under the theme. This implies that after the members of SAF€RA have elaborated the detailed call descriptions and allocated the joint funding, a call for proposals can be expected by the end of this year (beginning of next year the latest) (see news item later in this newsletter).

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Cntd/...1st Joint Gov4Nano-SAFeRA Workshop



Project summary

Implementation of Risk Governance: meeting the needs of nanotechnology

The Gov4Nano project will develop the first implementation of a future-proof operational Nano Risk Governance Model (NRGM) that addresses the needs of the transdisciplinary field and innovative (and key enabling) character of nanotechnology.

- It will explore the potential added value of upcoming tools and approaches such as Findable, Accessible Interoperable and Re-usable (FAIR) databases, data-hackathons, blockchain technology and implementation of Safe-by-Design to achieve adaptive and resilient risk governance.
- It will support consensus building, prioritization and harmonization of practices amongst stakeholders, with a focus on key aspects for risk governance of nanotechnologies, including risk assessment, risk management, risk perception and risk communication, risk-benefit evaluation, and risk-transfer and the societal desirability of nanotechnology applications.
- It will include knowledge management and data management, efficiently executed through stakeholder involvement.

Gov4Nano will take into account the particulars of different generations of nano-technologies and risk/benefits/public concerns to develop an integrated approach connecting the scientific, regulatory and market layers and the different actors involved from generation of data and knowledge to application in legislation and standards, and propose the basis for efficient and effective risk governance of nanotechnologies. The Gov4Nano project will design and establish a Nanotechnology Risk Governance Council (NRGC), to create a trustworthy and objective international umbrella for the risk governance of nanotechnologies.

Gov4Nano has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement 814401.

Gov4Nano
meeting the needs of
nanotechnology

Joint Event - ICEENN 2019 and NanoFASE Concluding Conference

Join us in Vienna from 5-6 September 2019



The **NanoFASE concluding conference** will be held in Vienna in coordination with the 14th International Conference on Environmental Effects of Nanoparticles and Nanomaterials (ICEENN) - a whole week of fascinating research, applications and training on topics spanning from basic research to application, modelling and regulatory aspects.

NanoFASE scientists will have just put the finishing touches on the NanoSafety Cluster Environmentally-focused White Paper that will be a major reference piece.

Why should you be in Vienna?

- ICEENN is the leading international conference on environmental nanoscience, focussing on recent advances in fate and behaviour of nanomaterials, their applications and possible effects in the environment.
- NanoFASE plenaries offer perspectives from research institutes, industry and regulators on how our project moves the cursor on Environmental Exposure Assessment for Nanomaterials.
- Small hands-on workshops provide live demos and insight into the NanoFASE project models and the clickable Exposure Assessment Framework. For more details visit: <https://nanofase2019.univie.ac.at/nanofase/>.

Key topics at ICEENN include:

- Eco-Toxicology of Nanomaterials
- Nano-Bio Interactions and Uptake
- Analytical Methods and Instrumentation
- Release, Behavior and Fate in the Environment
- Applications in the Environment
- Modeling, Data Repositories and Nano-Informatics
- Nano and Microplastics in the Aquatic Environment



ICEENN 2019
& NanoFASE
Concluding
Conference

JOINT EVENT

[Register now!](#)

Details:

Website: <https://nano2019.univie.ac.at/home/>

Contact: nano2019@univie.ac.at

Conference Venue: University of Vienna's 9th district campus

Conference Series Organizers

Greg Goss - University of Alberta - CAN

Richard Handy - Plymouth University – UK (also NanoFASE)

Jamie Lead - University of South Carolina - US

Greg Lowry - Carnegie Mellon University – US (NanoFASE Advisor)

Eva Valsami-Jones - University of Birmingham - UK

Frank von der Kammer - University of Vienna – AT (also NanoFASE)

Local Organizing Committee

Frank von der Kammer

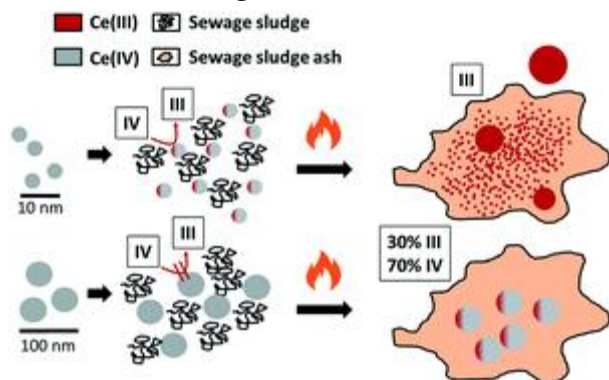
Silvia Jankovic

NanoFASE scientists produce HOT articles!

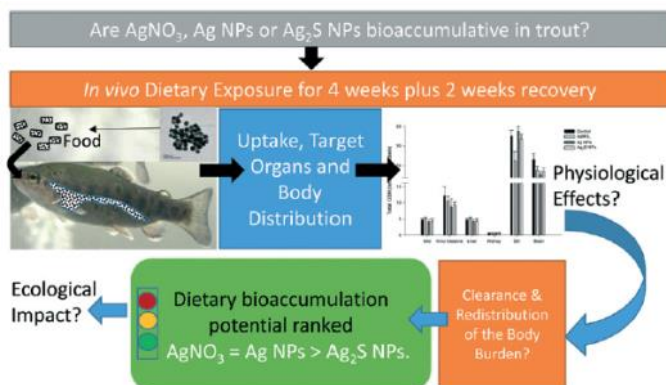
Four papers distinguished by *Environmental Science: Nano*

As our [project publications](#) approach the **landmark total of 50**, NanoFASE articles are called HOT by *Environmental Science: Nano*. Selection is based on the exceptionally positive referee reports the manuscript received during peer review, along with the Editor's assessment of the significance and impact of the paper. The four HOT NanoFASE papers below are considered among the top 10% of papers published this spring in the journal. Congratulations especially to our [Young NanoScientists](#) for their remarkable performance!

"[Transformation of cerium dioxide nanoparticles during sewage sludge incineration](#)" by A. Gogos, J Wielinski, A. Voegelin, H. Emerich and R. Kaegi. "Our results highlight the importance of particle size and the surrounding matrix both affecting the transformation of CeO₂ during sewage sludge incineration."



"[Dietary exposure to silver nitrate compared to two forms of silver nanoparticles in rainbow trout: bioaccumulation potential with minimal physiological effects](#)" by N.J. Clark, D. Boyle, B. P. Eynon and R. D. Handy (University of Plymouth, UK). They add knowledge about the trophic transfer of nano silver to fishes in aquatic food chains and dietary accumulation of pristine silver nanoparticles and silver sulphide particles, likely the most persistent form in the environment.



"[A model sensitivity analysis to determine the most important physicochemical properties driving environmental fate and exposure of engineered nanoparticles](#)" by Meesters JAJ, Peijnenburg WJGM, Hendriks AJ, Meent DVande and Quik JTK. "A sensitivity analysis with the SimpleBox4nano model showed that as part of environmental risk assessment, exposure modelling delivers insightful results by indicating to what extent engineered nanoparticles' physicochemical properties affect predicted environmental exposure."

"[Tools and rules for modelling uptake and bioaccumulation of nanomaterials in invertebrate organisms](#)" by Brink NW van den, Kokalj AJ, Silva PV, Lahive E, Norrfors K, Baccaro M, Khodaparast Z, Loureiro S, Drobne D, Cornelis G, Lofts S, Handy RD, Svendsen C, Spurgeon D and Gestel CAM van (2019). *Environmental Science: Nano* 2019, **6**, 1985-2001. "Quantification of nanomaterials uptake and elimination by organisms is key in assessing environmental risks of NMs. This critical review scrutinised conventional modelling approaches for applicability to NMs and found physiologically based pharmacokinetic (PBPK) models to be promising."

[Check out the NanoFASE Library for more NanoFASE publications!](#)

Release of ACEnano Knowledge Infrastructure version 2.0

Updates related to the protocols, data collection and the general usability

Lucian Farcal

Edelweiss Connect GmbH

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<https://acenano.douglasconnect.com>



The knowledge infrastructure of ACEnano includes instances to accommodate data and protocols related to physico-chemical characterisation of nanomaterials. The protocols database facilitates adding, sharing and comparing methods in a questionnaire-like format guiding users through the documentation process from starting material identification to sample preparation, measurement and data processing. The data warehouse offers long-term storage of the results in a reusable format that are directly linked to the methods applied.

Overall, the functionality of the KI supports the implementation of Findable, Accessible, Interoperable and Reusable (FAIR) data principles, the reproducibility and documentation process towards the goal of generating reference resources for nanomaterials risk assessment.

What's new?

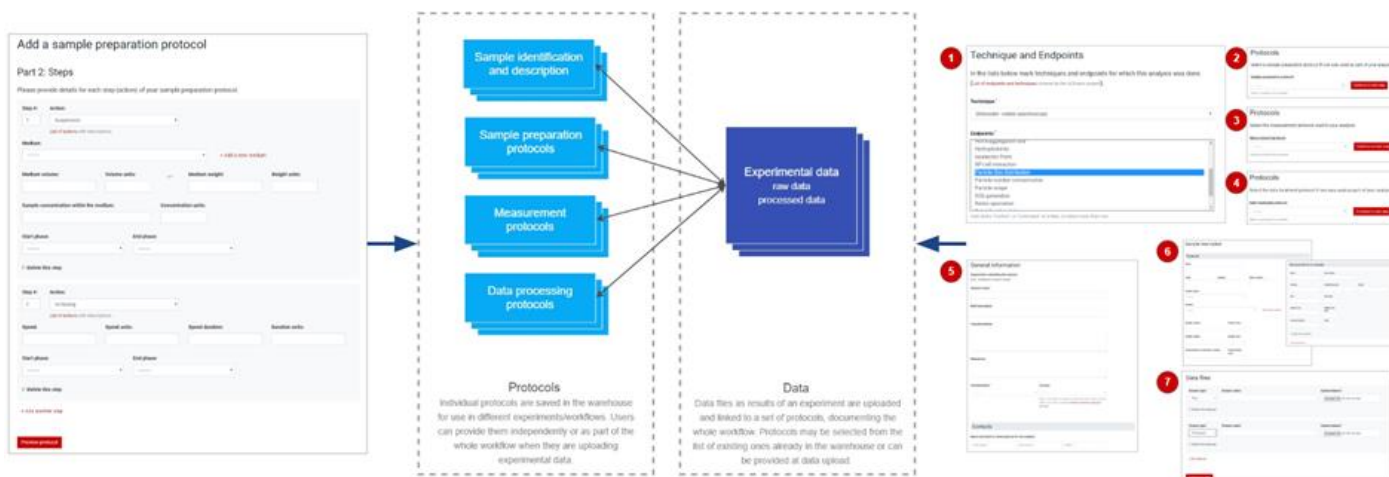
Version 2.0 of the platform offers a user friendly and improved format for addition of protocols, with features that capture information related to the sample preparation, the measurements of the nanomaterial properties and the data processing. Several issues from version 1.0 were resolved in order to make the process easier but also to collect additional information and metadata.

The data warehouse is now available and included in version 2.0 of the platform. This section allows users to create a workflow and upload the measurement results.

The data upload process includes seven steps:

1. Select the technique used in the analysis and which endpoints were measured
2. Select which sample preparation protocol was used
3. Select the measurement protocol
4. Select which data treatment protocol was used
5. Provide details such as analysis name, description, and contact information
6. Provide description of the sample that was used in the measurement
7. Upload raw and processed data files

The workflow created and data uploaded are then saved in the database in order to be further consulted and used by the project members. In a next step the data is managed using the EdelweissData™ technology, that supports the processes of annotation, organisation and storage of data and metadata.



...cntd/

Documentation and training materials

- User manual: <https://github.com/NanoCommons/tutorials/tree/master/ACEnano%20manuals>
- Poster summarising the KI's features: <https://acenano.douglasconnect.com/dissemination/event/152/euronanoforum-2019/>
- Contact and user support: acenano@edelweissconnect.com

Next training sessions:

- Data Management training dedicated to ACEnano members, prior to the consortium meeting (25 September 2019, Gijon, Spain)
- Training session organised during the 'EU NanoSafety Cluster Week' (7-10 October 2019, Copenhagen, Denmark)

About the platform

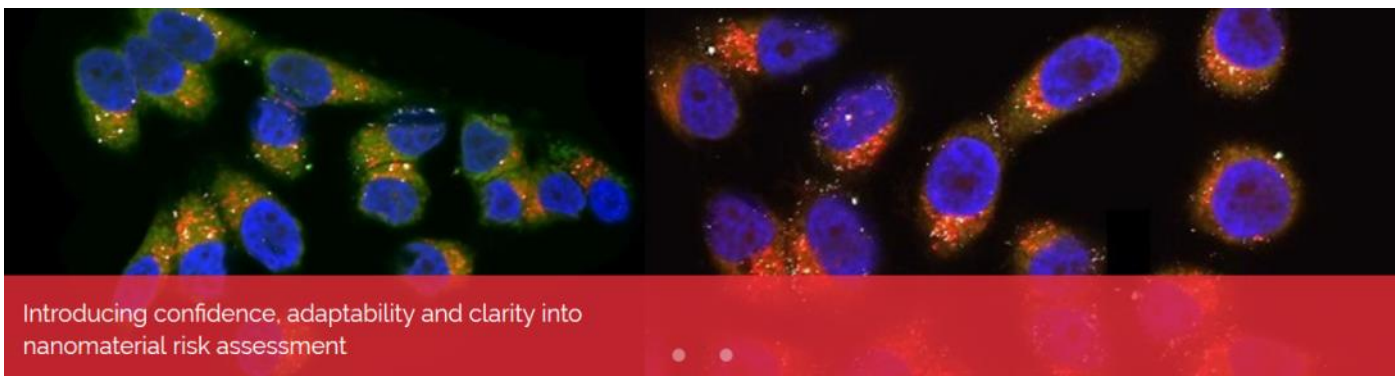
ACEnano knowledge infrastructure (KI) supports the activities related to data collection and method optimisation in the area of physicochemical characterisation of nanomaterials. The KI provides a central place to access harmonised and standardised methods and data, supporting the implementation of Findable, Accessible, Interoperable and Reusable (FAIR) data principles, the reproducibility and documentation process towards the goal of generating reference resources for nanomaterials risk assessment.

A public version of the data warehouse is being integrated in the NanoCommons data ecosystem. By semantic annotation and linking, this guarantees harmonisation and interoperability with other data sources of the EU NanoSafety Cluster.

The protocols section facilitates access and sharing of methodology applied in nanosafety, starting with nanomaterials characterisation protocols developed or optimised within the ACEnano project. The experimental datasets of nanomaterials characterisation is stored together with relevant metadata pertaining to sample preparation, measurement, and the data treatment. The resulting measured value and its metadata will give as complete information as possible so that possibilities of future use of the measured value is maximised.

The data warehouse is offering long-term storage in a re-usable format of data produced by the ACEnano project or provided by the nanosafety community.

The development of the KI is supported by ACEnano (EU Horizon 2020 NMBP project no. 720952), while its availability to a wider community is assured by the activities in NanoCommons (Horizon 2020 INFRAIA project no. 731032).



OpenRiskNet Final Workshop

23-24 October, Amsterdam

<https://openrisknet.org/>

Lucian Farcal, Edelweiss Connect GmbH

lucian.farcal@edelweissconnect.com



Workshop

Creating powerful workflows combining data and software services demonstrated on risk assessment case studies

23 - 24 October 2019, Amsterdam, Netherlands | <https://openrisknet.org/>

OpenRiskNet

RISK ASSESSMENT E-INFRASTRUCTURE

OpenRiskNet consortium is pleased to announce its final workshop that will be organised in Amsterdam, The Netherlands on 23-24 October 2019.

The 2-day workshop is addressing all OpenRiskNet stakeholders (scientific, industrial and regulatory communities) that are invited to participate in this interactive event. This will ensure that all relevant and target groups that need to be aware of the project achievements have access to this information and are enabled to give feedback, and also be trained on the provided solutions.

- Day 1 will focus on the case studies, demonstrations and hands-on training sessions, where the teams involved in the development and implementation will present and demonstrate the use of the services included in the OpenRiskNet e-infrastructure.
- Day 2 will focus on the outreach and sustainability aspects.

A poster session will be also organised, therefore you are welcome to submit your abstract. All the details, including the registration form, are available on our website: <https://openrisknet.org/events/74/>
<https://openrisknet.org/events/74/>

About OpenRiskNet

OpenRiskNet is a 3-year project funded under the Horizon 2020 EINFRA-22-2016 Programme. The main objective is to provide an open e-Infrastructure providing resources and services to a variety of communities requiring risk assessment, including chemicals, cosmetic ingredients, therapeutic agents and nanomaterials. OpenRiskNet will work with a network of partners, organized within an Associated Partners Programme.

Toxicology and risk assessment are undergoing a paradigm shift, from a phenomenological to a mechanistic discipline based on in vitro and in silico approaches that represent an important alternative to classical animal testing applied to the evaluation of chronic and systemic toxicity risks. Large databases and highly sophisticated methods, algorithms and tools are available for different tasks such as hazard prediction, toxicokinetics, and in vitro – in vivo extrapolations to support this transition. However, since these services are developed independently and provided by different groups world-wide, there is no standardized way to access the data or run modelling workflows. To overcome the fragmentation of data and tools, OpenRiskNet will provide open e-Infrastructure resources and services supporting different scientific communities.

Jobs

Head of Research Department—Nanosafety

International Iberian Nanotechnology Laboratory

Closing Date for applications: 18th August 2019 – 23:00 (Lisbon Time)

INL – the International Iberian Nanotechnology Laboratory - is currently seeking a leading researcher on Nanosafety domain.

This position is framed within the ERA Chair project INL has been recently awarded – the SINFONIA. Under the acquired funding, INL will be establishing a new Nanosafety R&D Department. At this stage INL is recruiting an experience research leader – the ERA Chair Holder – that will be heading this new research department.

The overall aim of the project is to boost RTD activities in the Nanosafety area and strengthen the research and innovation potential of INL.

Details of the vacancy can be found here. <http://careers.inl.int/our-vacancies/?p=job%2FoYFbafwl>



Toward an operational methodology to identify industrial-scaled nanomaterial powders with the Volume Specific Surface Area criterion

<https://pubs.rsc.org/>

Olivier Witschger

INRS (France)

olivier.witschger@inrs.fr



Claire Dazon,^a Olivier Witschger,^{*a} Sébastien Bau,^a Vanessa Fierro^b and Philip L. Llewellyn^c

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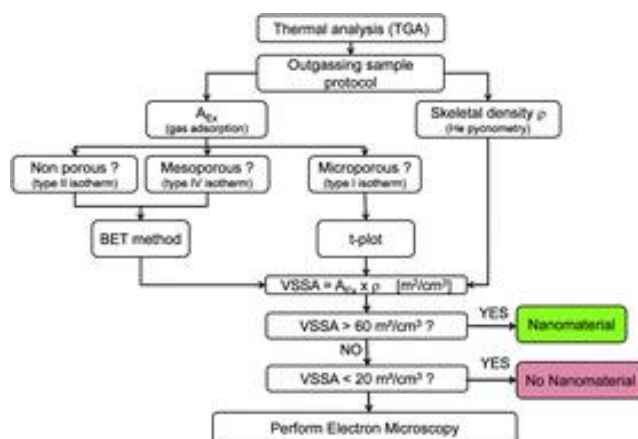
E-mail: olivier.witschger@inrs.fr

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^c Aix-Marseille Univ., CNRS, Laboratoire MADIREL, Marseille, France

Abstract

Nanoparticulate powders are increasingly found in the workplace. Inhalation exposure to airborne nanoparticles (NPs) is possible throughout the life-cycle of the powders. As the toxicity of NPs has never been demonstrated, it remains essential to evaluate the risks associated with NPs in order to propose preventative measures. The first step of a risk assessment strategy consists in the identification of the ‘nano’ nature of a material, which suffers from a lack of an operational methodology. Here, we present a simplified and operational strategy relying on the Volume Specific Surface Area (VSSA) for nanomaterial identification, based on the recommendation stemming from the European Commission and previous work on this topic from the European Project Nanodefine. The proposed strategy was tested on a set of 15 representative industrial powders (TiO₂, SiO₂, CuO, and ZnO), covering a wide range of properties, and previous published data. The VSSA classification was validated via a comparison with the particle size obtained by Transmission Electron Microscopy (TEM). It was evidenced that the VSSA is in accordance with particle size for nanomaterial powder classification. The proposed methodology involves relatively accessible methods such as thermogravimetric analysis, nitrogen adsorption and helium pycnometry and limits the detection of false negatives. Moreover, it does not imply systematic confirmation of the results with the reference particle size criterion. Our results suggest that the VSSA is a promising parameter to be used for risk assessment and should be further investigated on powder mixings to confirm its relevancy to define nanomaterial powders.



<https://pubs.rsc.org/en/Content/ArticleLanding/2019/NA/C9NA00010K#!divAbstract>

DOI: 10.1039/C9NA00010K

SAF€RA call for projects 2020

Olivier SALVI
 SAF€RA Secretariat (INERIS DEVELOPPEMENT)
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2020 call: Safety concerns and opportunities related to advanced materials and new technologies in energy production and storage

SAF€RA will publish its fifth joint call at the end of September 2019, on the topic Safety concerns and opportunities related to advanced materials and new technologies in energy production and storage. The topic includes nanosafety.

The call will cover both technical/technological dimensions of this topic and the societal dimensions (public perception, policy-making and governance issues). We anticipate that 2 to 3M€ in funding will be available. It will use a two-stage application process (pre-proposals in mid-January 2020, full proposals in March 2020, funding decisions provided around June 2020, contracts starting towards the end of 2020). A matchmaking website will be available for candidates interested in forming consortia, and a number of virtual brokerage events will also be organized after the call publication.

Information on the call that will be published end of September will be available at: <https://call.safera.eu/>

Industrial safety?

The scope of SAF€RA includes research on the prevention of major accidents, with off-site consequences and risks to the environment and society, and in particular the economic benefits of industrial safety solutions, safe innovative processes, preparedness and response as well as protection of the environment, new methods to enhance the creation of a safety culture and prudent attitudes, risk reduction strategies, reference technologies for life extension of aged and repaired structures, as well as products and systems required to improve industrial safety.

About SAF€RA

SAF€RA is a partnership between 19 research funding organizations from 10 European countries who collaborate on research programming and launch joint calls in the field of industrial safety. It prolongs the work developed in the SAF€RA ERA-NET, which was funded by the European Union's Seventh Framework Programme for research, technological development and demonstration during the period April 2012 – March 2015. Industrial safety is an enabling success factor in the pursuit of beneficial and sustainable business activities.

The SAF€RA ERA-NET received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 291812.





14th International Conference on Environmental Effects of Nanoparticles and Nanomaterials

1-4 September 2019, Vienna, Austria

The **14th International Conference on Environmental Effects of Nanoparticles and Nanomaterials** - ICEENN 2019, is the leading international conference on environmental nanoscience. ICEENN brings together researchers, industry and regulators to discuss recent advances in our understanding of the fate and behaviour of nanomaterials, their applications and possible effects in the environment and the key issues relating to maintaining the economic and social benefits of nanotechnology.

This year ICEENN will be held back to back with the concluding conference of the EU Horizon 2020 project NanoFASE. This offers participants a whole week of fascinating research, applications and training on topics spanning from basic research to application, modelling and regulatory aspects. Topics will include:

- A - Eco-Toxicology of Nanomaterials
- B - Nano-Bio Interactions and Uptake
- C - Analytical Methods and Instrumentation
- D - Release, Behaviour and Fate in the Environment
- E - Applications in the Environment
- F - Modeling, Data Repositories and Nano-Informatics
- G - Nano and Microplastics in the Aquatic Environment

More information on the Conference, registration, abstract submission and programme can be found here <https://nano2019.univie.ac.at/iceenn/>

The Department of Environmental Geosciences at the University of Vienna is organizing this event together with NanoFASE. Please visit the related [homepage of the NanoFASE Concluding Conference](#) for more information

The conference venue is the University of Vienna's 9th district campus, located closely to the city centre with all the opportunities offered by this vibrant city. World class museums, operas and theatres as well as shopping areas, restaurants, clubs and bars are at your fingertips or only a short tram ride away.

- **Conference Series Organizers**

Greg Goss - University of Alberta - CAN
 Richard Handy - Plymouth University - UK
 Jamie Lead - University of South Carolina - US
 Greg Lowry - Carnegie Mellon University - US
 Eva Valsami-Jones - University of Birmingham - UK
 Frank von der Kammer - University of Vienna - AT

- **Scientific Committee**

Greg Goss - University of Alberta - CAN
 Richard Handy - Plymouth University - UK
 Jamie Lead - University of South Carolina - US
 Greg Lowry - Carnegie Mellon University - US
 Eva Valsami-Jones - University of Birmingham - UK
 Frank von der Kammer - University of Vienna – AT
 Thilo Hofmann – University of Vienna – AT

- **Local Organizing Committee**

Frank von der Kammer
 Silvia Jankovic





<http://iptc2019.eu/>

We are happy to announce the **12th International Particle Toxicology Conference**, which will take place 11th – 13th September 2019 in Salzburg Austria. It is preceded by an **International Young Scientist Forum**, 9th – 10th September. Information and registration about both events can be found on the website iptc2019.eu.

The IPTC series of conferences brings together experts on particle toxicology. The audience is worldwide and all types of particles are considered. The conference covers basic research issues, but has a strong focus on applications of particle toxicology, which are in work place safety, environmental safety, consumer safety, medical and diagnostic developments and other fields.

A focus of the Salzburg meeting will be the challenges to translate knowledge derived from particle safety research into regulation and legislation, which is now a main issue in the field. The first IPTC in Austria will contribute to developing solutions for the benefit of workers, consumers, patients and environment.

We invite you to Salzburg and look forward to seeing you here!

Organizing Committee:

Nils Bohmer, DECHEMA
 Flemming R. Cassee, RIVM
 Albert Duschl, U Salzburg (Chair)
 Andrea Haase, BfR
 Michael Riediker, SCEOH
 Roel Schins, IUF
 Christoph Steinbach, DECHEMA

Keynote Speakers:

Matthew Campen, U New Mexico, USA
 Mary Gulumian, U Witwatersrand, South Africa
 Jonathan Powell, U Cambridge, UK
 Ng Kee Woei, Nanyang Technical U, Singapore
 Andrea de Vizcaya-Ruiz, Polytechnique Inst, Mexico



Faculty of Natural Sciences
 Hellbrunner Str. 34
 5020 Salzburg, Austria





PATROLS project stakeholder workshop

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

September 12, 2019, Paris

PATROLS (Physiologically Anchored Tools for Realistic nanOmateriAL hazard aSessment) is holding a stakeholder workshop to present and discuss advanced methods and tools being developed within the project, which can also be used to support development of AOPs for nanomaterial hazard assessment.

The workshop is hosted in tandem with the OECD WPMN Workshop on “Advancing Adverse Outcome Pathway (NanoAOP) Development for Nanomaterials Risk Assessment and Categorization” on September 11 and delegates to the PATROLS stakeholder meeting may also attend the OECD meeting.

The workshop will include presentations on advanced systems in the areas of:

- Ecotoxicology
- In silico hazard testing systems
- In vitro human tissue models
- Nanomaterial characterisation in biological systems.

The aim of the workshop is to showcase and seek stakeholder feedback on tools being developed within PATROLS, and participants are encouraged to take an active role in our discussions.

Sessions include:

- Nanomaterial characterisation in biological systems & in silico hazard models
- Advanced in vitro human tissue models & ecotoxicity testing systems

More details can be found within the PATROLS website:

https://www.patrols-h2020.eu/news-events/news/detail.php?we_objectID=156

EU-U.S. NanoEHS Communities of Research (CORs) Workshop

October 15-16, 2019, Aix en Provence, France

EU_US NanoEHS CORs

<https://us-eu.org>

Camille de Garidel-Thoron | CEREGE

cgaridel@cerege.fr



SAVE THE DATE: October 15-16, 2019

The 2019 EU-U.S. NanoEHS CORs Workshop will take place October 15-16, 2019, at the Europôle de l'Arbois in Aix en Provence, France. The workshop is organized by the European Commission and the U.S. National Nanotechnology



Initiative and co-hosted by the CEREGE (CNRS, AMU) and the Labex SERENADE.

More details are coming soon, <https://us-eu.org/save-the-date-october-15-16-2019/>

Global Summit on Regulatory Science 2019 Nanotechnology and Nanoplastics

24-27 September 2019
Lago Maggiore, Italy

European Commission's Joint Research Centre

Email: JRC-GSRS19@ec.europa.eu
Stefania.VEGRO@ec.europa.eu



The European Commission's Joint Research Centre (JRC) will co-organise with the Global Coalition for Regulatory Science Research (GCRSR) the Global Summit on Regulatory Science 2019 (GSRS19), 25-26 September 2019 in Stresa (VB, Italy) with satellite meetings, training opportunities and optional lab visits at the JRC in Ispra (VA, Italy) on 24 and 27 September 2019.

The **GSRS19** will bring together scientists from government, industry, and academic-research communities from around the world for addressing regulatory-research questions concerning Nanotechnology and Nanoplastics.

The focus will be on topics in Nanotechnology related to advances in standards, medical products/drugs, medical devices, food, cosmetic (personal care) products and the emerging pollutant nanoplastics.

The conference provides a platform where regulators, policy makers, and bench scientists can exchange views on innovative methodologies and regulatory assessments, as well as harmonising strategy via global collaboration.

The Event overview is available:

<https://ec.europa.eu/jrc/sites/jrcsh/files/gsrs19-ecjrc-overview-programme-draft.pdf>

- Pre-registration is open.
- More info and instructions on the web event: <https://ec.europa.eu/jrc/en/event/conference/gsrs19-global-summit-regulatory-science-2019-nanotechnology-and-nanoplastics>
- No conference fee will be charged. However participants will need to cover the costs of their travel and

NanoSafety Cluster Week

Building confidence in risk assessment and governance of nanomaterial innovation

October 7-10, Copenhagen

The NanoSafety Cluster is pleased to announce 4 days dedicated to “**Building confidence in risk assessment and governance of Nanomaterial Innovation**” in Copenhagen, October 2019.

The 4-day event kicks off with the **caLIBRAte final workshop** focussed on current knowledge and future outlook on stakeholder risk perception and information needs and nanosafety data availability.

caLIBRAte also presents nano-specific human and environmental risk assessment and management tools tested in the project, plus the decision support tool developed, the NanoRisk Governance Portal.

A two-day **Nanosafety Cluster Scientific Conference** then follows, organised and sponsored by the projects NanoCommons, NanoSolveIT and NanoInformaTIX, focussed on the increasingly important roles of data accessibility and predictive modelling in nanomaterials governance and risk assessment.

NanoSafety Cluster business closes the week, including an open NSC meeting to which all are welcome to contribute, Working Group meetings to progress key community-driven activities, and a Steering Group meeting. In parallel, a training session on the **caLIBRAte Nano Risk Governance Portal** and underlying risk assessment, management and decision support tools will be offered.

NanoSafety Cluster Week

- October 7: caLIBRAte final workshop on risk assessment and governance
- October 8-9: NanoSafety Cluster conference Towards in silico nanosafety assessment – integrating experimental and computational approaches.
- October 10: NanoSafety Cluster Open meeting and caLIBRAte NanoRisk Governance Portal training

Who should attend?

The NanoSafety Cluster Week is open to all interested actors and is free of charge (excl. dinner). Attendees will be able to register for any or all of the events taking place and full registration, including abstract submission will open shortly.

The thematic sessions to be covered during the NSC conference are:

- Nanosafety data management tools: from experiment to knowledge
- Hazard assessment along the life cycle of nanomaterials and nano-enabled products
- Exposure assessment along the life cycle of of nanomaterials and nano-enabled products
- Systems biology & mechanistic insights for nanosafety
- Nanoinformatics & Predictive Modelling
- Categorisation & grouping of nanomaterials
- Tools and approaches for safe by design of nanomaterials and processes
- Risk assessment and risk management solutions

Register now

Visit www.nanocalibrate.eu/calibrate-closing-conference to express an interest in taking part and you will be contacted when full registration opens.

Visit <https://www.nanosafetycluster.eu/news/349/66/EU-NanoSafety-Cluster-Week-2019-7-10-October-2019-Copenhagen-Denmark.html> for additional information



NANOCON 2019

11th International Conference on Nanomaterials Research and Application

Oct 16-18, 2019

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

e-mail: info@nanocon.cz

Website: <https://www.nanocon.eu>



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 honourable mentions will be awarded.

SCAR AG Plastic at the Poles

28th—30th October 2019

University of Hull, UK

Ilaria Corsi

University of Siena

ilaria.corsi@unisi.it



Save the date for the upcoming international workshop on plastic (micro and nano) in the polar environment organized by the Action Group Plastic at the Poles of the **Scientific Committee of Antarctic Research**.

Please help us to circulate to the nanosafety community and any other interested stakeholders

<https://www.scar.org/scar-news/plastic-news/plastic-workshop-2019/>

SAVE THE DATE!

SCAR-AG workshop
**Plastic in the
Polar Environment:**
sources, impacts and solutions

University of Hull, UK
28-30th October 2019

more details coming soon....



Materials Science & Nanotechnology Conference

February 26-28, 2020 | Lisbon, Portugal

The Future Materials organizing committee invites participants across the globe to attend its annual flagship conference, Materials Science and Nanotechnology Conference which is going to take place during February 26 -28, 2020 in Lisbon, Portugal.

Future Materials 2020 is comprised of various sessions designed to offer comprehensive symposiums that address current issues in the field of Materials Science and provides a fantastic opportunity to network with your peers from academia and industrialists which includes professors, researchers, Materials Scientists, Materials Engineers, and Students.

Submit your research paper here: <https://materialsconference.yuktan.com/abstract-submission.php>



Materials Science & Nanotechnology Conference
February 26-28, 2020 | LISBON, PORTUGAL

Keynote Speakers

				
Mohammad Nazeeruddin Professor, École polytechnique fédérale de Lausanne, Switzerland	Maurizio Prato Professor, University of Trieste, Italy	Murali Sastry CEO, IITB-Monash Research Academy	Gianfranco Pacchioni Vice-Rector for Research, University of Milano-Bicocca, Italy	Jordi Arbiol President, Spanish Microscopy Society (SME)

Mail us at rishi.k@materialseurope.com

International Conference on Nanotechnology And Nanomaterials

March 2-3 2020
Rome, Italy

John Benson
Herald Meetings
nanotech@heraldmeetings.org

Herald Meetings takes pleasure in inviting the scientific community across the globe to attend the International Conference on Nanotechnology and Nanomaterials during March 02-03, 2020 at Rome, Italy around the theme "Inquisition of Nanotechnology for better prospective"

Why Attend?

Nanotechnology 2020 Conference is a multidisciplinary program with broad participation with members from around the globe focused on learning about Nanotechnology and Nanomaterials and their advances. This is your best opportunity to reach the largest assemblage of participants from Nanotechnology and Nanomaterials community that is from academia, business, medical groups, related associations, societies and also from government agencies, pharmaceutical, biomedical and medical device industries.

<https://nanotechnology.heraldmeetings.com/>



INTERNATIONAL CONFERENCE ON NANOTECHNOLOGY AND NANOMATERIALS

THEME: INQUISITION OF NANOTECHNOLOGY FOR BETTER PROSPECTIVE

March 02 - 03, 2020 | Rome, ITALY



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



@EUNanoSafety



LinkedIn



NewsLetter



NSC Compendium

www.nanosafetycluster.eu