NanoSafety Cluster Newsletter

DOI: 10.5281/zenodo.3541539 www.nanosafetycluster.eu Issue 17: Autumn 2019

Welcome to the 17th NSC Newsletter and thank you for all your contributions.

A slightly later than usual Autumn (Winter?) Newsletter brings you a report from the **NanoSafety Cluster week**—the key NSC event this year, held in Copenhagen. A packed week attended by over 180 participants brought together major cluster projects and saw the launch of **caLIBRAte's** Nano Risk Governance Portal as well as the new NSC website. Make sure that you are registered on the website for Working Group updates.

Following this report, we have a special feature on **NanoFASE** in which Coordinator Claus Svendsen looks back over four years of highly successful team science and describes how its legacy will continue. **ACEnano** then presents its Knowledge Infrastructure which is now publicly available for the scientific community to collect, analyse and share nanomaterials physicochemical characterisation protocols and data. On p.12, **NanoExplore** provides us with an opportunity to help shape the future of research in nanomaterials safe use by participating in a short survey and an update on the latest developments. This is followed by a report from **GRACIOUS** on its latest results and an announcement of the **Nano Training School in Venice. PATROLS** and **BIORIMA** have both hosted stakeholder engagement events central to their initiatives; the former at the OECD and the latter in Rome, which you can read about on pages 17 and 18. Meanwhile, **OpenRiskNet** has held its final workshop entitled "Creating powerful workflows combining data and software services demonstrated on risk assessment case studies" in Amsterdam over two days. The final part of the NSC Project News is a gentle nudge to visit the websites of the 3 Risk Governance projects **NanoRIGO**, **RiskGONE** and **Gov4Nano** where you can sign up to receive project news and developments.

In a short section on publications and resources, **NanoDefine** directs you to a publication on its Implemented Decision Support Framework for Nanomaterial Identification.

The newsletter concludes with details of **Job opportunities** at CEA and JRC (Ispra) followed by announcements of not-to-be-missed events including **Gov4Nano's Regulatory Risk Analysis Summit 2019**

As always, we very much hope you find this issue of interest and look forward to receiving your contributions for the next issue.

Kind regards
Lesley Tobin
news@nanosafetycluster.eu

WG Dissemination

Contents

NSC News 2
Nanosafety Cluster Week in Copenhagen 2
New NanoSafety Cluster website goes live! 5
Special Feature – NanoFASE – It's a wrap 6
NSC Project News 9
caLIBRAte project closes with launch of NRG Portal 9
ACEnano Knowledge Infrastructure publicly available 10
NanoExplore 12
Excellent results from the H2020 GRACIOUS Project 14
PATROLS project hosts Stakeholder day at OECD 16
BIORIMA mid-term meeting & stakeholder workshop 17
OpenRiskNet—The Final Workshop 18
The Risk Governance Triumvirate 20
Publications and Resources 20
NanoDefiner e-Tool 20
Job Opportunities 21
Events & Conferences 22
About the NanoSafety Cluster 27

Contribute to the NSC Newsletter here:

https://www.nanosafetycluster.eu/activities/news-events/news-events-submissions/nsc-newsletter-news-and-events-submission/

The deadline for submissions for the next issue is January 18th 2020.

Subscribe to the Newsletter here:

https://www.nanosafetycluster.eu/contact/nsc-mailing-lists/

Newsletter enquiries can be sent here:

news@nanosafetycluster.eu

Nanosafety Cluster Week in Copenhagen

This year's Nanosafety Cluster meeting was organised alongside project caLIBRAte's closing conference in Copenhagen in early October around the theme of "**Building confidence in risk assessment and governance of Nanomaterials Innovation**".

The combined events were attended by about 180 participants. The week-long programme of activities included, apart from caLIBRAte's meeting on the 7th of October, a variety of workshops and training events, as well as a two-day **Nanosafety Cluster Scientific** conference entitled "*Towards in silico nanosafety assessment – integrating experimental and computational approaches*" on the 8th and 9th of October.

The **conference** was organised and sponsored by the projects NanoSolveIT, NanoInformaTIX and NanoCommons, and focused on the increasingly important roles of data accessibility and predictive modelling in nanomaterials governance and risk assessment.

The thematic sessions of the NanoSafety Conference were:

- 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 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

The conference included oral and poster presentations from Nanosafety Cluster projects, which aimed to update the community on the latest nanosafety research and set the research directions for the next 4 years from the nanoinformatics and nanosafety governance projects.

The workshops on Thursday 10th October included training on a range of NSC project tools: GUIDEnano, NanoSafer, Stoffenmanager Nano and LICARA NanoScan, ACEnano Knowledge Warehouse, SimpleBox4Nano, and nSSWD and its application in SUNDS.

Also taking advantage of the nanosafety week were the 3 governance projects, RiskGone, NanoRIGO and Gov4Nano, who held a face to face joint project meeting on Friday 11th October to discuss their aligned activities on stakeholder engagement, the governance council, data management and the information portal.

These events were further enriched by the Cluster's own activities:

- a steering group meeting in the afternoon of the 9th focussing on aligning projects with cluster activities and ensuring the steering group is updated on important forthcoming opportunities, including Horizon Europe, the Malta Initiative, WG activities and the cluster's roadmap update.
- an open forum on the 10th of October, to which all were welcome to contribute,
- and a number of Working Group meetings to progress key community-driven activities.

/Nanosafety Cluster Week in Copenhagen cntd...

The Open Nanosafety Cluster forum was a great opportunity to engage with the wider community. The meeting was chaired by Éva Valsami-Jones, who gave a short update on the latest cluster activities and initiated the discussion on the cluster's future.

- Jana Drbohlavova presented an update on Horizon Europe and the status of nanosafety there and Alexander Pogany gave an update on the behalf of the member state Programme Committee.
- Iseult Lynch and Flemming Cassee presented the activities planned around an update of the Nanosafety Research Roadmap 2025, with the aim to feed into horizon Europe and forthcoming call topics.
- Tassos Papadiamantis presented the revised Nanosafety Cluster website.
- Flemming Cassee presented the Malta Initiative (MI) and encouraged NSC project coordinators and other members to check the current list of MI projects and to identify where information and knowledge can be offered to the various MI projects and inform Flemming about these.
- Andreas Falk presented the information about co-financing opportunities for Canadian project partners in H2020 (and later on in Horizon Europe) projects: In short, Canada will allocate up to C$50 million over the next five years to support Canadian participation in Horizon 2020 and Horizon Europe. Further details (e.g. a co-funding announcement by Canada, etc.) can be found on NSC-Webpage.
- Besides the funding opportunities, Alexander Pogany (bmvit, Austria) informed participants that the "4th EU-Asia-Dialogue on NanoSafety" will be hosted by his ministry and will take place on June 15th 2020, in Vienna, Austria. If you are interested in this event, please do not hesitate to contact Andreas Falk from the NSC-Coordination team.
- Presentations were made by working groups
  - ⇒ A (Training and Education),
  - ⇒ B (Materials and Standards),
  - ⇒ C (Exposure and Hazard; which is now spilt in 4 subgroups due to the size, see NSC website),
  - ⇒ D (Models and Tools for Risk Assessment),
  - ⇒ E (Innovation and Safer by Design),
  - ⇒ F (Data management) and
  - ⇒ G (Regulation and Risk Governance).

- A further proposal was made for the establishment of a nanoscale plastic waste Working Group to be led by Nanna Hartman and Iseult Lynch and for a WG focussing on Internationalisation and International Affairs to engage and interact with countries outside the European Union.

Of note, all working groups have started a new list for subscribers, so if you want to be involved in one or more working groups, please subscribe via https://www.nanosafetycluster.eu/contact/nsc-mailing-lists/.

A conclusion from all these activities was that in the coming months many opportunities and uncertainties will arise for nanosafety and concerted action will be needed to ensure the community's future relevance in Europe's research horizon.

/cntd...

/Nanosafety Cluster Week in Copenhagen cntd…

Images from the event

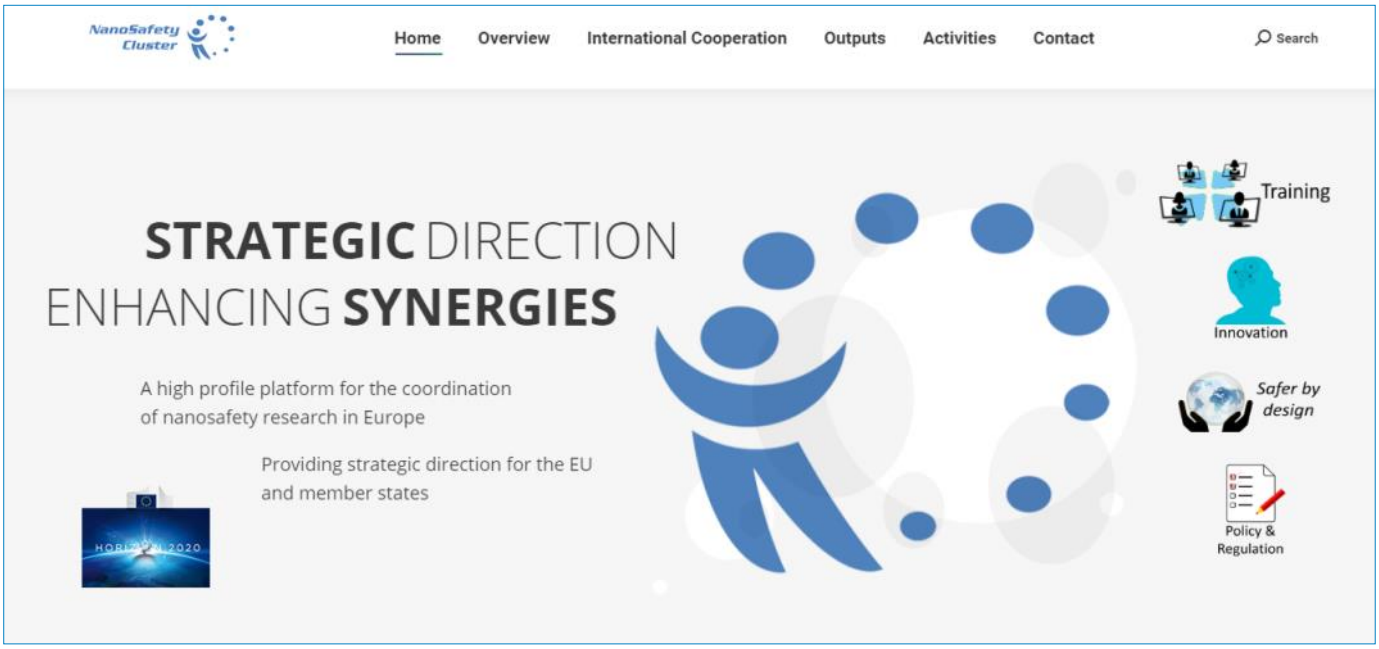
New NanoSafety Cluster website goes live!

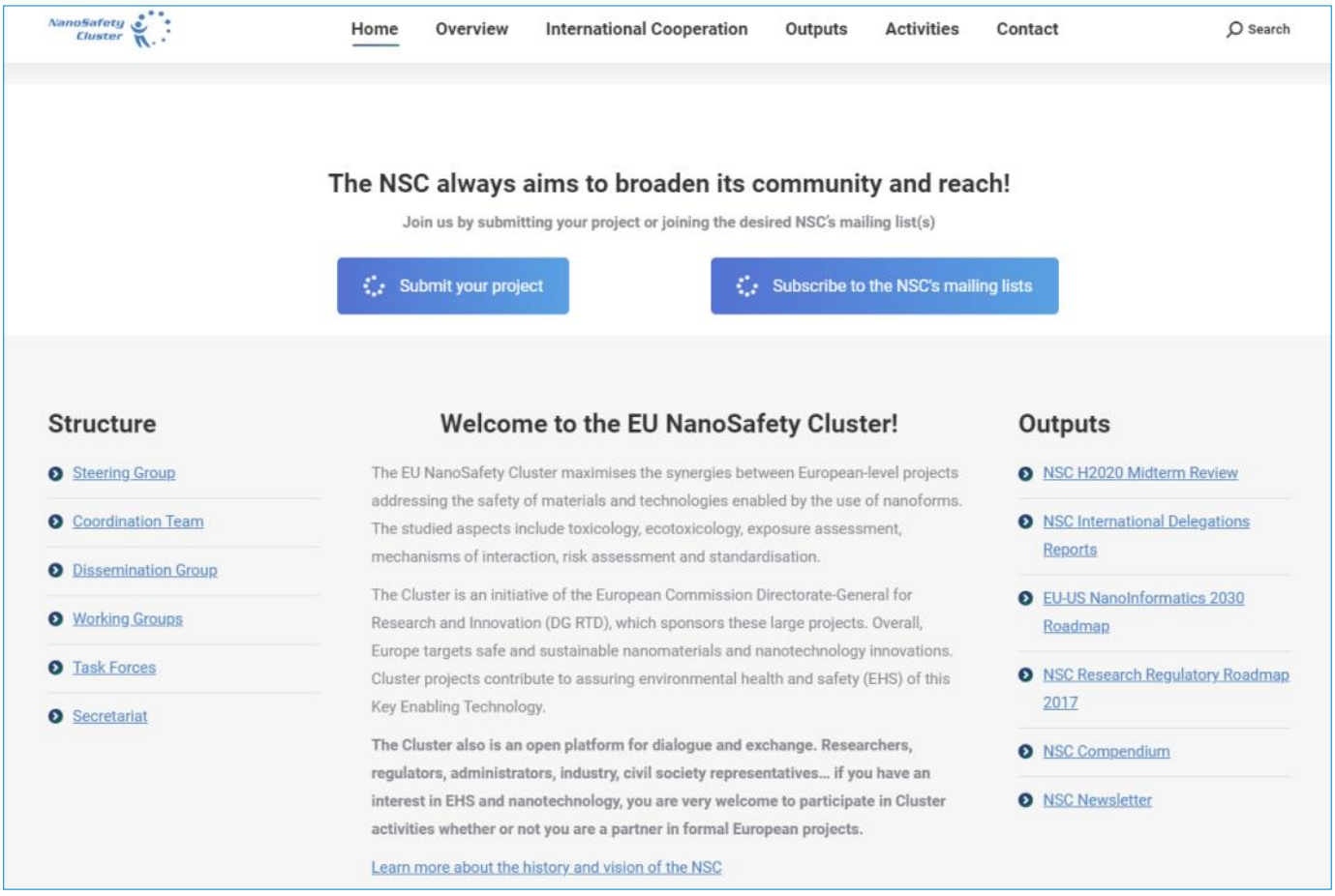
Tassos Papadiamantis at the University of Birmingham has created and launched the new Nanosafety Cluster website, introduced and presented at the Nanosafety Cluster week in Copenhagen.

The images below are a sample of the new look and feel as well as the dynamically driven content that you can find.

Take a look, **subscribe to the working group lists,** and **browse through the latest NSC outputs** at:

www.nanosafetycluster.eu





NanoFASE—It's a wrap!

Claire Mays, Symlog
clairemaysnanofase@gmail.com

With 45 partners and 100 people involved, only Team Science could deliver our spatiotemporal Exposure Assessment Framework. Coordinator Claus Svendsen of NERC looks back:

We set out in 2015 to produce a new state-of-the-art framework for streamlined evaluation of environmental release, fate, transfer and exposure for Engineered Nanomaterials (ENMs), taking into account transformations, and moving from mass-based lifecycle and release flow approaches, towards systems that can render spatial and temporal variability.

Our ambition was to bring nano environmental assessment up to or beyond the level achieved for conventional chemicals. Our work required a truly **transdisciplinary** approach, seamlessly integrating expertise in (eco) toxicology, environmental science, modelling, exposure and risk assessment, manufacturing, industrial innovation and design, life cycle analysis, instrumentation, materials science, characterisation, standardisation, communication...

Throughout 4 years of intensive cooperation, we've shown together that **team science works.**

As NanoFASE wraps up in September 2019, that experience is brought to H2020 projects **Gracious, NanoCommons,** and **NanoSolveIT**, new proposals and collaborations within the EU-US CoRs and NanoSafety Cluster. Our understanding of environmental transformation of ENM is being translated into **international standards (TG 318 and 305, Tests 312 and 106...)**. NanoFASE partners look forward to teaming up with you in future!

We are drawing together our NanoFASE learning and conclusions into factsheets and **major publications** in prestigious outlets - including a virtual special collection detailing the *empirical methods and findings, exposure modelling, and overall impact on environmental risk assessment.* Follow us on Twitter to capture them upon release!

You can also visit our online library at http://nanofase.eu, where you can find 50 peer-reviewed publications including HOT ARTICLES and up to 150 more expected.

NanoFASE contribution to standardization

As the NanoFASE project draws to a close we share information on how our work and several of our lead investigators have contributed to standardization efforts at international and national levels. Of particular note: the contributions to procedures and guidance on assessing environmental transformations of nanomaterials, heteroaggregation and dissolution kinetics, leaching in soil column, and a tiered approach to bioaccumulation. You can find out more about our contributions to standardisation here.

/cntd...

/NanoFASE cntd...

Stakeholder Talks at NanoFASE Concluding Conference

Our Concluding Conference was hosted by UniVIE immediately after ICEENN 2019. We invited a panel of Regulatory, Industry and Academic stakeholders from our Advisory Board and project partners to **reflect on NanoFASE, the Clickable Framework and the way forward.**

You can access their comments and presentations here .
Stakeholder comments on the NanoFASE Clickable Framework:

"An open access textbook, easily used in the university classroom; exercise could be: ***design an environmental assessment strategy taking account of transformation processes, fate descriptors and tiered approach***"
"Understanding the language used by specialists in the field: of value for future reading and technical reviews"
"Customer awareness, knowledge on environmental compartments, very interesting notions on all the possible transformations of nanomaterials"
"Gives our company & clients access to environmental assessment information"
"Shows release pathways as a vehicle for conducting life cycle analyses"

Ongoing legacy of NanoFASE through sister H2020 projects

- The NanoCommons project will further promote the use/acceptance/implementation of the NIKC database for Europe, developed by NanoFASE partner Biomax Informatics using training materials produced in NanoFASE by Team Helium in consultation with the University of Birmingham.
- The Gracious project adopts NanoFASE concepts of functional fate grouping (FFG) and consideration of environmentally realistic forms of nanomaterials, adapting these in hazard assessment for ENMs.
- The NanoSolveIT project further enhances the utility of the NanoFASE water-soil-organism model by developing ENM-focussed integrated approaches to testing and assessment (IATA) that incorporate our model.

The future of the field:

Ever wonder about the 3 dozen incredible Young NanoScientists released to the environment by NanoFASE?
Read their thoughts about what they learned and contributed, and the craziest moments on the next page and here:
http://nanofase.eu/getatt.php?filename=Young%20scientists%20poster_updated_2274.pdf

/cntd...

/NanoFASE cntd...

OUR YOUNG NANOSCIENTISTS – A SIGNIFICANT RELEASE TO THE ENVIRONMENT

« My proudest scientific achievement is the case study performed with FCCCO's photocatalytic road tiles, which consisted in the recovery of the released material from the ***weathering experiments*** *in the climatic chamber. The experiment was really complex and very very long, it took us more than one year to finish it. When we obtained the final results, everything matched perfectly with what we expected! Now we are* ***refining the methodology*** *to make it shorter and easier, and we will be able to apply it to other materials. It was worth spending the time!* **Vicenç Pomar - LEITAT - Spain**

« I have learned a lot from both the project and the scientists involved. As Young NanoScientists we had a lot of ***opportunities to communicate our science*** *within the project allowing me to start overcoming my fear of public speaking. My proudest scientific achievement was to win a NanoFASE poster competition in Lancaster in 2017. My biggest surprise scientifically? How long cleaning plant roots takes :) ! A colleague and I came up with a root-washing song that evolved, transformed and was adapted to famous songs...* **Denitsa Tarnovska – CEH – UK**

« The work in NanoFASE gave me insights into the working principles of big international science projects and allowed me to ***connect to many leading scientists*** *in the field. It also taught me critical time management strategies and sharpened my* ***ability to discriminate*** *between things important and less important. My proudest scientificachievement is definitely the conduct and evaluation of the pilot scale experiments (incineration and pyrolysis). Funny only in retrospect: rushing by car from PSI where we had beamtime, to EAWAG in the middle of the night to pick up some ingredients and make preliminary measurements...By some miraculous twist of fate the reactions worked....* **Alexander Gogos – EAWAG – Switzerland**

« My greatest satisfaction from NanoFASE is being able to meet so many great scientists and ***develop a larger network****. My proudest achievement is being able to* ***refine the base model*** *in such a way that it gives estimates of the forms in which the nanomaterials are released to the environmnent. This is highly relevant for environmental fate, toxicity and risk assessment. My greatest surprise was probably to realise that nano-TiO2 could transform during its life cycle. It is known to behave as an inert material, but a NanoFASE study that showed that it can* ***transform*** *during incineration.* **» Véronique Adam – EMPA – Switzerland**

« NanoFASE has taught me a lot about the ***power of interdisciplinary research*** *and how beneficial it is when done properly. It's been a pleasure working with experts in so many different fields and gaining their knowledge, insights and hard work towards my main project role - the creation of the NanoFASE water-soil-organism model. My greatest satisfaction is also my proudest achievement – seeing the finished NanoFASE* ***water-soil-organism model in action.*** *»* **Samuel Harrison – NERC CEH – UK**

This project receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 646002

caLIBRAte project closes with launch of Nano Risk Governance Portal

Dr Claire Skentelbery
Director General
Nanotechnology Industries Association
Nanotechia.org

caLIBRAte closed after a €9.7 million, 3.5 year project which aimed to significantly advance risk governance capabilities for nanomaterials throughout the product development pathway.

The project mission was to undertake performance testing, calibration and implementation of a next generation System-of-systems Risk Governance Framework for nanomaterials banding (prioritisation) supported by guidance for all stakeholders, from innovators to regulators. It should harvest latest research in risk governance and create a long term resource for global stakeholders.

The project brought together 24 partners from Europe, the US and South Africa, using the starting points of the Cooper Stage Gate Model, the ISO 31000 risk governance framework, and the Emerging Risk Management Framework DIN CWA 16649:2013 E/DIN SPEC 21299.

Key project work included:

- Stakeholder perception and needs in risk governance
- Health and environmental risk assessment tool calibration, including control banding, qualitative and fully integrated predictive quantitative risk assessment operational at different information levels
- Development of the Nano Risk Governance Portal enabling users to identify the right risk assessment tool for their needs, undertake global horizon scanning for nano risks and opportunities and plan their way through risk governance for materials and products
- Creation of the caLIBRAte dataset, integrated into eNanoMapper

The Nano Risk Governance Portal was launched on October 31 at www.nanoriskgov-portal.org
It was supported by three dedicated meetings:

- 'Building Confidence in Risk Assessment and Governance of Nanomaterials' hosted in Copenhagen on October 7, as part of NanoSafety Cluster Week. *Agenda and slides here*
- 'Building Confidence in Risk Assessment and Governance of Nanomaterials' webinar on October 29. *Recording here and slides here*
- 'Nano-Risk Governance Portal – introduction and launch' webinar on October 31 *Recording here and slides here*

ACEnano Knowledge Infrastructure publicly available to the scientific community

Collect, analyse and share nanomaterials physicochemical characterisation protocols and datasets

Lucian Farcal, Edelweiss Connect GmbH
Web: https://acenano.douglasconnect.com/

Background

The ACEnano project ("Analytical and Characterisation Excellence in nanomaterial risk assessment: A tiered approach") aims to develop a widely implementable and robust tiered approach to nanomaterials physicochemical characterisation. Read more about ACEnano at http://www.acenano-project.eu/. To showcase the capabilities of standardised but also newly emerging methods, several protocols and datasets are created by specialised laboratories. The ACEnano knowledge infrastructure (KI) was specifically designed to store and share these protocols and data and, finally, to become the standard repository for physicochemical data.

The ACEnano knowledge infrastructure (KI) supports all activities related to data collection. It 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.

The KI addresses the needs of:

- Method developers (e.g., instruments providers, laboratories working on new methods) that aim to store, optimise and validate their protocols;
- Methods applicants (e.g., industry or research laboratories) that wish to have access to existing procedures, workflows and datasets in order to apply similar approaches and evaluate them regarding their performance, applicability domain and reproducibility or perform training activities;
- Laboratories applying additional methods (e.g., functionalisation of nanomaterials), performing safety or toxicity assessments or using computational modelling to further analyse the data, that require access to harmonised physicochemical characterisation data;
- Industry, CROs and consultants for the preparation of regulatory dossiers (e.g., under REACH regulation) by offering access to structured physicochemical characterisation information and datasets on different regulatory-relevant endpoints.

It addresses, on the one hand, the needs of method developers (e.g., instruments providers, laboratories working on new methods) that aim to store, optimise and validate their protocols and, on the other hand, the needs of methods applicants (e.g., industry or research laboratories) that wish to have access to existing procedures, workflows and datasets in order to apply similar approaches and evaluate them regarding their performance, applicability domain and reproducibility. Similarly, the laboratories applying additional methods (e.g., functionalisation of nanomaterials), performing safety or toxicity assessments or using computational modelling to further analyse the data, require also access to harmonised physicochemical characterisation data. Finally, the aim of the knowledge infrastructure is to cover regulatory needs and the extraction of the information requested for the regulatory dossiers.

About the platform

The knowledge infrastructure of ACEnano accommodates data and protocols. 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 (data and a reach set of metadata) in a reusable format that are directly linked to the methods applied.

The experimental datasets of nanomaterials characterisation are stored together with relevant metadata pertaining to sample preparation, measurement and data treatment. By providing information that is as complete as possible, future use of the measured value is optimised.

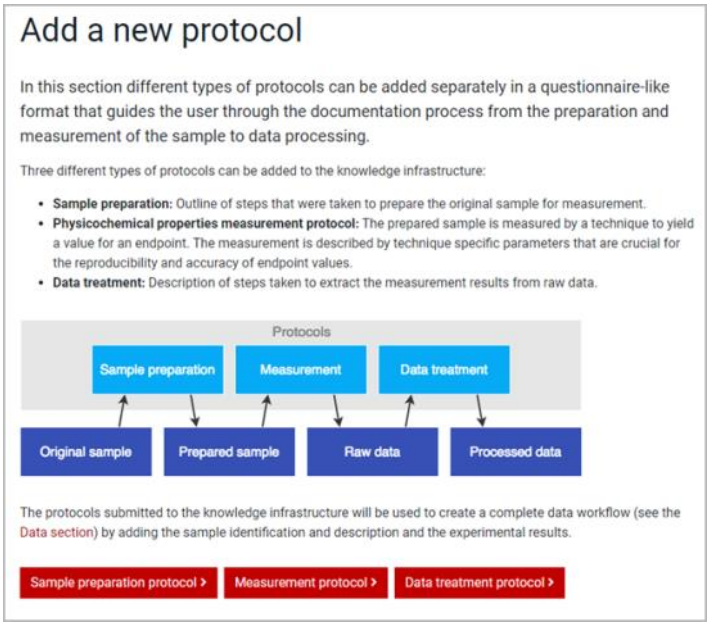
/cntd...

/ACEnano cntd…

Overall, the functionality of the KI supports the implementation of **Findable, Accessible, Interoperable and Reusable (FAIR) data principles**, a transparent reproducibility and documentation process. The use of FAIR principles will generate reliable reference resources for nano materials risk assessment.

The new public version of the data warehouse available from **4 September 2019** is being integrated into the NanoCommons data ecosystem. By semantic annotation and linking, this guarantees harmonisation and interoperability with other data sources of the EU NanoSafety Cluster.

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).



Main features offered by the Knowledge Infrastructure

- Simple and data protected log-in system;
- Addition, storage and sharing of protocols and procedures;
- Creation of complete physicochemical characterisation workflows (from sample preparation, measurement and data treatment);
- Upload and download raw, processed and summary datasets;
- Harmonisation of the methodology within organisations or projects;
- Supports intra- and interlaboratory comparison of protocols and results towards achieving reproducibility and validation goals;
- Automatically use of data for analysis and computational modelling via the application programming interface (API);
- Direct access to EdelweissData™ technology (metadata integration, data searching, browsing and selection, data APIs selection, etc.);
- Combination of physicochemical data with other hazard and exposure data via linked data approaches based on common terminology and ontologies;
- Multiple endpoints and techniques covered.

Endpoints: Average size dimension, Batch dispersion and stability, Crystalline phase, Density, Deposition rate, Elemental composition and chemical purity, Functional coating, Homoaggregation rate, Hydrophobicity, Isoelectric Point, NP-cell interaction, Particle Size Distribution, Particle number concentration, Particle shape, ROS generation, Redox speciation, Solubility/dissolution, Volume Specific Surface Area and Z-potential.

Currently the Knowledge Infrastructure supports the area of physicochemical characterisation of nanomaterials, but we will extend its applicability to other domains. Many additional features will also be offered, including an advanced **DataExplorer tool based on EdelweissData™ technology and datasets citation using DOIs.**

Documentation

User manual: https://github.com/NanoCommons/tutorials/tree/master/ACEnano%20manuals

Poster summarising KI features: https://acenano.douglasconnect.com/dissemination/event/152/euronanoforum-2019/

Contact

For user support, business enquiries or feedback, please contact us at acenano@edelweissconnect.com

Dissemination and training sessions

Data Management training addressed to ACEnano partners (25 Sep 2019, Gijon, Spain)

Lecture and hands-on sessions organised during the 'EU NanoSafety Cluster Week' (7-10 October 2019, Copenhagen, Denmark)

Lecture and demo during the 'OpenTox Euro' Conference (29-31 October 2019, Basel, Switzerland)

NanoExplore—Integrated approach for exposure and health effects monitoring of engineered nanomaterials in workplaces and urban areas

Eva Penssler
Associate Regulatory Consultant, Yordas Group
e: e.penssler@yordasgroup.com
w: https://www.yordasgroup.com/ | www.yordasgroup.com/hive
www.lifenanoexplore.eu

The project NanoExplore uses an integrated approach containing biomonitoring studies and the characterisation of exposure levels of engineered nanomaterials (ENM) in indoor workplaces and urban areas. Data of ENMs concentrations, measured by a wireless sensor network, appropriate biomarkers and a web-based data management tool will help to minimise possible effects of ENMs to human health.

Status quo:

- The survey, of companies to attend further studies for the measurement of ENMs exposure, is still open and will be further distributed. For wider participation, it had been translated into different languages and the consortium has discussed further channels for distribution. Several collaborations and/or direct contacts have been made for receiving a higher response rate
- Information regarding a critical evaluation of current data on biological effects and existing biomarkers of nanomaterial exposure was exchanged between the project partners
- The group is working on the selection for candidate biomarkers and on the development of a protocol for practical use of biomarkers
- Different non-invasive methods regarding the measurement of local and systemic effect biomarkers have been selected: exhaled breath condensate and exhaled air, urinary spot samples and brushing of the buccal epithelium. This selection will allow an assessment of acute as well as chronic effects
- Review of existing epidemiological studies for nanomaterials on behalf of the study design
- Discussions on the organization of the biomonitoring studies
- Pilot study in a factory close to Turin where TiO_2 is used for paints and varnishes
- Investigation of particle number concentration and particle size in various electronic components for allowing to detect trace amount of ultrafine and nanosized particles
- Preparation of the "Report on the functionalities and system requirements of the NanoEXPLORE integrated system"
- Test of a program for data management
- NanoExplore project was presented on the NanoSafety Cluster week in Copenhagen. Besides introducing the concept of the project to an audience of experts around the field of Nanosafety, various contacts for possible cooperations with other projects had been created.

Take our short survey:

Take our short 10-minute survey to help us identify most commonly used engineered nanomaterials (ENMs), exposure routes and release factors as well as conditions facilitating or hindering companies' participation in research on nanomaterials. Your views are essential and important; it will help shape the future of research in nanomaterials safe use.

Click here https://kwiksurveys.com/s/CEKCveoX#/o to start the survey

Project Partners:

Project Coordination: ALCON Consultant Engineers Ltd Athens, Greece
Email: ap@axonenviro.gr
Dissemination: Yordas Group Forchheim, Germany
Lancaster, UK
Email: j.friesl@yordasgroup.com

/cntd...

/NanoExplore cntd...

In other news:

The 2nd partners' meeting of the project took place on 8 April 2019 in Athens, Greece. The participants discussed the progress so far, next steps and also presented the project to the external monitoring team. In October, the project consortium met in Camplus Lingotto in Turin for an intensive exchange between the partners. The current status of the project was discussed and further steps had been planned. Besides the specification of the biomarkers, the design and technical requirements for the measurement device and the planned pilot study were discussed. Different locations and scenarios for the demonstration studies were weighted against each other.

This project is part funded by the European Commission Life with grant agreement LIFE17 ENV/GR/000285

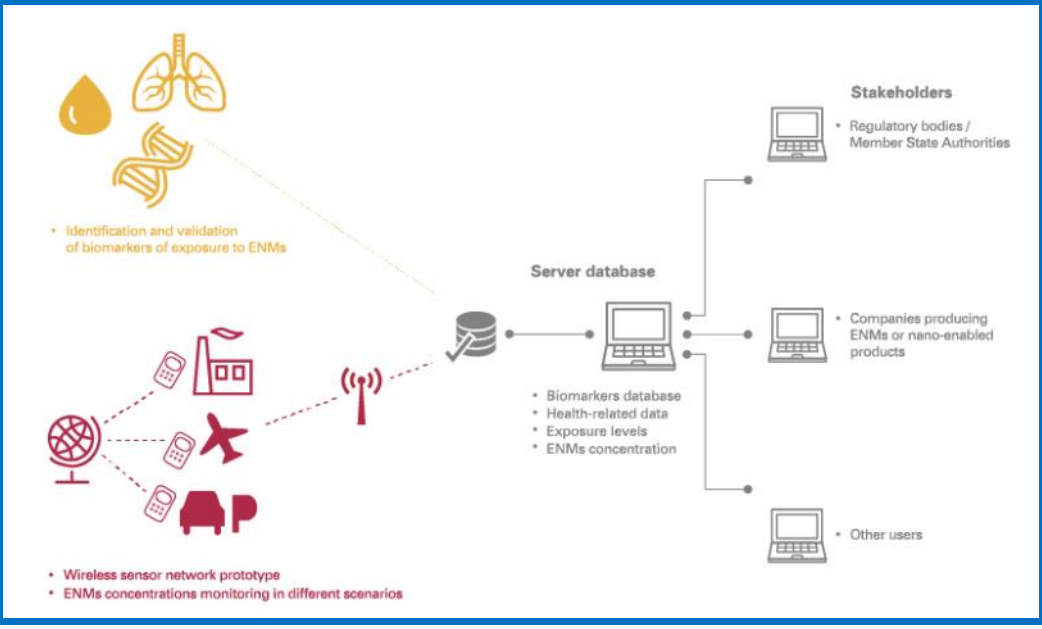
NanoExplore—An Overview

There is an urgent need to provide stakeholders, including regulatory bodies and companies, with an integrated approach to generate robust data on the levels of exposure and related health effects, supporting the risk assessment.

The Life NanoExplore project is working 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 engineered nanomaterials (ENM) in indoor workplaces and urban areas.

NanoExplore promotes a harmonized approach to overcome current data gaps and barriers limiting the implementation of the 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 (1-100 nm) by combining long series of robust data on the concentration of 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 on the concentration and effects of particles in the nanometer range (1-100 nm).

- NanoExplore will generate a panel of recommended biomarkers to support a harmonized health surveillance in the near future
- A major challenge within NanoExplore will be the definition of a robust monitoring system able to monitor relevant parameters, discriminate background levels, and identify operations modifying the exposure.
- The NanoExplore approach will be implemented in case studies from the Valencia community. Companies producing and/or using ENMs will be contacted to define a proper implementation plan.
- NanoExplore will generate new data on the particle concentration collected from the particle breathing zone (PBZ), supporting health surveillance)



Excellent results from the H2020 GRACIOUS Project

PRESS RELEASE
Lancaster, October 2019
Stella Stoyecheva

GRACIOUS develops a highly innovative science-based framework to enable practical application of Grouping, leading to Read Across and classification of nanomaterials and nanoforms

GRACIOUS is proud to share its recent advancements

Contributions to Making Data FAIR

We are glad to inform you that the GRACIOUS templates for data GRACIOUS templates for data logging are now publicly available from the JRC Publications Repository:
http://publications.jrc.ec.europa.eu/repository/handle/JRC117733
Partners from other research projects have already expressed their interest in using the templates to record their experimental data.

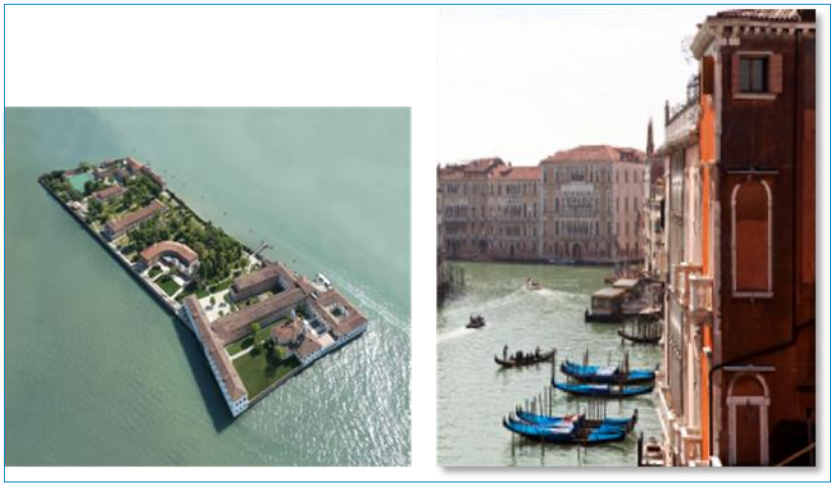
The templates are free to use and can be modified under Creative Commons – Share Alike license. When publishing new work that relies on them as such, or after modification, please acknowledge the source, "GRACIOUS templates", and refer to the correspondent DOI.

Members of the GRACIOUS consortium in collaboration with OpenAIRE experts have contributed to the development a Nanotechnology FAIR Guide that describes data management in the field of nanotechnology. Go to the full news and the guide: https://www.h2020gracious.eu/news/gracious-contributes-to-the-nanotechnology-fair-guide

Fostering Training and Education in the fields of Nanosafety, Nanomedicine and Risk Governance

GRACIOUS joined the Young Nano scientist Group. The Group was founded within the NanoFASE project and serves as a platform for an exchange between young researchers (PhD and postdoctoral students) over the period of their projects and beyond. GRACIOUS plans to have an active role in the Group's agenda by engaging young researchers from all NSC projects and beyond to elicit their views on the formation of the future training agenda of the next generations of young nanoscientist scholars. For more information and to join the group please contact Stella Stoycheva or Eva Penssler and find us on LinkedIn. To kick-start our activities in the Group we are inviting early career researchers from the NSC projects to become an active part of an exciting Training Week upcoming in March 2020 in Venice.

Save the dates 22th - Friday 27th March 2020 (TBC)! **for the 10th anniversary of the Nano Training School in Venice.**



Co-organised and sponsored by the Horizon2020 Projects GRACIOUS, BIORIMA, NanoinformaTIX, PATROLS, Gov4Nano, RiskGONE and NanoRIGO, the Training school will serve as a platform to showcase and transfer the latest research, tools and knowledge in the areas of Nanosafety, Nanomedicine and Risk Governance to young scientist. The Training Week will incorporate a Young Scientist Forum Day, dedicated to accommodate oral and poster presentations from young researchers, keynote speeches from prominent speakers and a variety of social and networking activities. Early Career Researchers from the organising projects are invited to become a part of the scientific committee of the Young Scientist Forum Day. To express your interest, contact Stella Stoycheva .

More information about the Training Week and abstract submission deadlines for the Young Scientist Forum will be available in mid-November.

/cntd...

/Gracious cntd…

Save the dates 20-22 April 2021 for the GRACIOUS-BIORIMA-PATROLS final conference held in the framework of the Nanotox Conference! GRACIOUS, together with BIORIMA and PATROLS are co-organising NanoTox2021, the 10th International Conference on Nanotoxicology. The conference will take place on the 20th to 22nd April 2021 in Edinburgh, UK. You can register your interest now at www.nanotox2021.org Further information on speakers, key deadlines and abstract submission guidelines will be announced soon.

Progress on the GRACIOUS Framework

Following an intensive cycle of stakeholder consultation activities, research and refinements since the beginning of the project the GRACIOUS Draft Framework is now transferred to a manuscript and submitted for publication. The next stage of our stakeholder engagement activities will feature a webinar and stakeholder engagement workshop aimed at industry representatives.

Project Facts:

Project Duration:	42 months, starting January 2018
Consortium:	The GRACIOUS consortium consists of 23 partners spanning Europe and the USA, including representatives from academia, industry, policy makers and regulators.
Total Budget:	7.1 Million EUR total project volume

Press Contact:

Stella Stoycheva, Yordas Group
s.stoycheva@yordasgroup.com

About the Project

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

Background:
Manufacturing and functionalising materials at the nanoscale leads to a whole array of nanomaterials varying in e.g. size, morphology and surface characteristics. Due to financial, time and ethical consideration, safety testing of every unique nanomaterial for their potential adverse effects is virtually impossible. For these reasons, more efficient ways to obtain safety information are needed.

Ambition:
GRACIOUS has three fundamental ambitions:

- Excellence in science
- Relevance to stakeholders
- International cooperation and visibility.
-

Impact:
Application of the Framework will allow movement away from the case-by-case risk assessment paradigm, thereby improving the efficiency of risk analysis and decision making for safer design of quality nano-enabled products.

Methodology:

- The project will work continuously with stakeholders in an iterative cycle of design, testing and refinement to ensure that the Framework effectively meets the needs of both regulators and industry.

PATROLS project hosts Stakeholder day at OECD: AOPs in focus

September 12, Paris

Nikolina Latković
Communications and Project Officer
Nanotechnology Industries Association
e: nikolina.latkovic@nanotechia.org
w: www.nanotechia.org

PATROLS
Advanced Tools for NanoSafety Testing

The PATROLS project hosted a stakeholder workshop on 12 September 2019 for stakeholder feedback, particularly from the standards and regulatory community on the project's advanced methods and tools being developed for next generation safety assessment tools for improved prediction of effects from chronic ENM exposure in humans and the environment. 44 attendees from 15 countries across Europe, Asia, North America and South America attended the workshop, which delivered a combination of presentations and discussion break out sessions.

Presentations from PATROLS included:

Nanomaterial (NM) characterisation in biological systems and in silico hazard models

- Methodologies for NM characterisation in complex in vitro human systems
- Methodologies for NM characterisation in complex ecotoxicological systems
- In silico testing systems

Advanced in vitro human tissue models and ecotoxicity testing systems

- Lung models
- Liver (commercial and cell line models) and gastro-intestinal tract models
- In vivo benchmarking (chronic exposure studies)
- Ecotoxicity testing systems

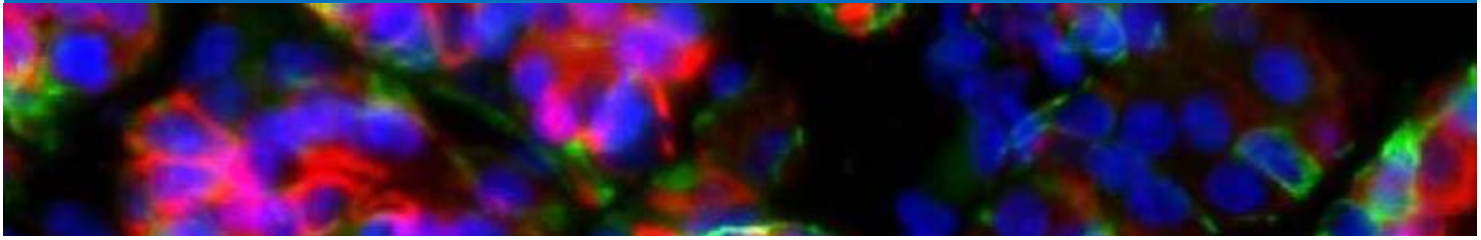
Breakout sessions addressed questions including:

- What would encourage you to consider data generated using these tests/what would you like to see in order to reduce uncertainty around the use of these tests?
- Which models/tools would you see value in taking forward/accelerating into a risk assessment setting and why?
- Are the tools applicable across all or only certain sectors?

PATROLS would like to thank the OECD and all workshop participants for an active day of discussion. All slides and conclusions from the day are available on the PATROLS website HERE and you are invited to follow the project LinkedIn page and newsletter for all project outcomes and future opportunities for participation.

PATROLS - Physiologically **A**nchored **T**ools for **R**ealistic nan**O**materia**L** hazard a**S**sessment

PATROLS is an international project combining a team of academics, industrial scientists, government officials and risk assessors to deliver advanced and realistic tools and methods for nanomaterial safety assessment. PATROLS will provide an innovative and effective set of laboratory techniques and computational tools to more reliably predict potential human and environmental hazards resulting from engineered nanomaterial (ENM) exposures. These tools will minimise the necessity of animal testing and will support future categorisation of ENMs in order to support safety frameworks.



BIORIMA mid-term meeting and stakeholder workshop in Rome

Lisa Bregoli, PhD
EU Project Expert - European Funding Division
Warrant Hub S.p.A.
lisa.bregoli@warranthub.it

"BIORIMA* activities are progressing successfully! The mid-term report on activities gives us full confidence about the ability to reach the ambitious goals to provide an Integrated Risk Management framework for nano-biomaterials (NMB) used in advanced therapy medicinal products and medical devices." This is, bottom line, the main result of the General Assembly meeting which took place in Rome on November 5-6th at the CNR premises (National Council of Research, partner of BIORIMA and local organizer of the meeting). All workpackages are progressing in line with the time plan, including the development of tools for materials characterization, fate and exposure analysis, testing for human and environmental hazard, risk assessment and management, considering the whole life cycle of NBM: from production, to use, up to disposal.

On November 7th, right following the General Assembly meeting, the first BIORIMA decision support system (DSS) prototype was shown to a group of stakeholders from industry and regulatory institutions during the second "BIORIMA Stakeholder Workshop" at the premises of Università Tor Vergata (in Rome) partner of BIORIMA. The fruitful discussion with stakeholders confirmed that BIORIMA is committed to deliver an integrated risk management framework which is tailored to industry users and needs, as well as in line with regulatory demands.

Next appointments for the public: the third BIORIMA training school (in 2020 it will be organized together with other 6 EU-funded projects on march 22-27th) and the General Assembly meeting with stakeholder public workshop, which will take place in one year time in Venice. Stay tuned through our website, twitter and LinkedIn! www.biorima.eu

*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 760928.

OpenRiskNet—The Final Workshop

Lucian Farcal
Edelweiss Connect GmbH
lucian.farcal@edelweissconnect.com

The Final OpenRiskNet Workshop was organised on 23-24 October 2019 in Amsterdam, The Netherlands. The topic of the event was "Creating powerful workflows combining data and software services demonstrated on risk assessment case studies".

The workshop was attended by 53 participants, representing all OpenRiskNet stakeholders (scientific, industrial and regulatory communities). This ensured that all relevant and targeted 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.

The event aimed to disseminate the achievements and implemented concepts of the project, make the stakeholders aware of the solutions developed and find the best options for the adoption by other projects or organisations. The event offered the opportunity for the OpenRiskNet services users, developers and administrators as well as the members of related e-infrastructure communities like EOSC to interact with OpenRiskNet developers, modellers and project managers. Strong focus was put on experiences from the community building efforts fostered by the associated partner programme and the implementation challenges, establish and strengthen links to other projects and organise the transfer of the technology into further initiatives presented by both sides, consortium members but even more important associated partners.

The first part of the 2-day event focused on the OpenRiskNet case studies, demonstrations, posters and hands-on training sessions, where the teams involved in the development and implementation presented and demonstrated the use of the services included in the OpenRiskNet e-infrastructure covering all aspects from setting up the infrastructure and virtual environments, deploying services to the use of specific services, combining them and their use in complex workflows to address specific risk assessment tasks:

- Case studies flash presentations
- Workflows: practical example of Jupyter notebooks use, Data curation example, workflow across multiple case studies
- Deploying Applications (addressed to developers, services providers and infrastructure admins)
- Modelling exercise (built around the ModelRX case study, support of the DataCure) (addressed to end-users)
- Ontology and semantic annotations

/cntd...

/The Final OpenRiskNet Workshop cntd...

The second day focused on the outreach and sustainability aspects of the project. The associated partners and Implementation Challenges winners presented their achievements and the status of the integration of their services in the e-infrastructure:

- Strategy used to build confidence in PROSILICO's in silico methods for prediction of human clinical ADME/PK
- FAME 3: Predicting the Sites of Metabolism in Small Molecules for Phase 1 and Phase 2 Metabolic Enzymes and FAME 3 API in OpenRiskNet
- Using SPARQL to explore human protein data in neXtProt and beyond
- ToxicoGx: An R platform for integrated toxicogenomics data analysis
- US EPA AOP-DB: A database resource for the exploration of Adverse Outcome Pathways
- ToxPlanet: demo, information on API, discussion on use case scenarios

This session was concluded by a lecture and demonstrations on Diamond Light Source as the OpenRiskNet's first external Virtual Environment deployment, and lessons learned from the associated partner programme.

The final but very important topic of this event was related to the project sustainability measures, the support and maintenance of the infrastructure after the end of the project. Collaborations and links created with other communities were presented and discussed with representatives of other major pan-European infrastructures and policy makers like NanoCommons and EOSC (including here EOSC-hub, OpenAIRE or eInfraCentral

The adoption of OpenRisknet solutions by NanoSafety community and NanoCommons infrastructure was shown, while the EOSC session included several lectures and demonstration:

- Introduction to the European Open Science Cloud (EOSC) and OpenAIRE: an EOSC implementation project
- eInfraCentral: an EOSC implementation project
- EOSC-hub: an EOSC implementation project
- Technical demo of cloud and storage services in EOSC

The workshop concluded with a panel discussion on the lessons learned and next steps, funding opportunities and alignment with EOSC initiative, services marketplace and the EOSC early adopters calls.

The Booklet of this event with its complete description, agenda, abstracts and additional information is available online. Also, all the presentations and materials used during the event are available on the workshop web page.

The Risk Governance Triumvirate

The three EU H2020 nano risk governance projects—NanoRIGO, RiskGONE and Gov4Nano— continue to work together to effectively improve risk governance of nanomaterials.

During the 12th International Particle Toxicology Conference held in Salzburg in September, 135 stakeholders from across the world gathered to focus on the challenges of translating knowledge from particle safety research into regulation and legislation.

Visit the projects' websites to find out more through newsletters, events and stakeholder invitations and help shape the future of risk governance in nanomaterials.

PUBLICATIONS AND RESOURCES

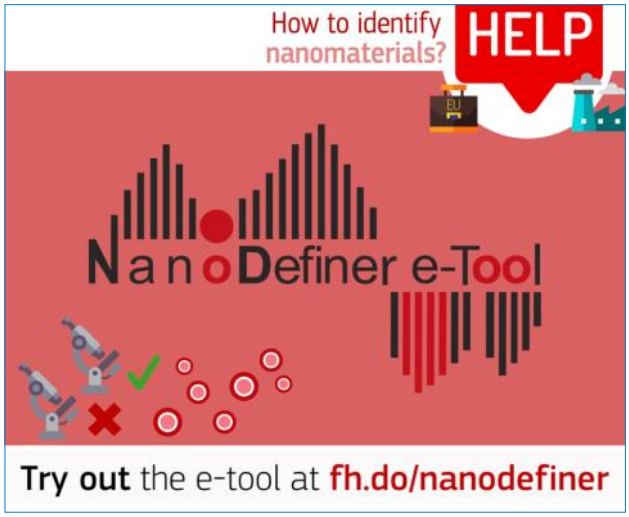
NanoDefiner e-Tool:

An Implemented Decision Support Framework for Nanomaterial Identification

Raphael Brüngel
raphael.bruengel@fh-dortmund.de
University of Applied Sciences and Arts Dortmund (FH Dortmund)

Recently, an article on the NanoDefiner e-tool has been published in the MDPI Materials Special Issue "Nanomaterial Characterization Methods: Leaping Towards Validation". It provides a comprehensive introduction to the e-tool's background, concepts, functional principles, and current state.

- Article URL: https://www.mdpi.com/1996-1944/12/19/3247
- Special Issue URL: https://www.mdpi.com/journal/materials/special_issues/nanomaterial_characterization
- Try out the e-tool at https://fh.do/nanodefiner
- CC BY 4.0 (https://creativecommons.org/licenses/by/4.0/)



12 month postdoctoral position at CEA (Grenoble, France)

Safe by design functional coating for interior and exterior with enhance radiation efficiency: a way to save building energy

WARM-ECOPAINT a sub project of LABEX SERENADE

Simon Clavaguera
CEA - Labex Serenade partner
http://www.labex-serenade.fr/

- The candidate must hold a PhD thesis preferably in material sciences.
- Experience in relation with the targeted field of activities will be appreciated
- The Post Doctorate candidate must be highly dynamic, sociable, feel comfortable to speak and write in English, be very autonomous and strongly motivated by collaborative and collective works.
- The position is requested to perform the coating synthesis and the characterisation of the coating properties.
- Location: CEA in Grenoble, France.
- Duration of contract: 12 months
- Contact: Olivier Renard (olivier.renard@cea.fr)

For more information, visit:
http://www.labex-serenade.fr/sites/default/files/documents/news/warm_ecopaint_post-doc_offer_cea.pdf

Traineeship Opportunity European Commission's Joint Research Centre

Stefania Vegro
stefania.vegro@ec.europa.eu

Traineeship Opportunity at the European Commission's Joint Research Centre (Ispra site, Italy):
Code: 2019-IPR-F-000-013068 - ISPRA, Regulatory science framework for nano(bio)material-based health products.

For more information and how to apply, go to: https://recruitment.jrc.ec.europa.eu/?type=TR

Regulatory Risk Analysis Summit 2019

Meeting nanosafety needs across disciplines and domains

Dec 4-5, 2019, the Netherlands

The Regulatory Risk Analysis Summit will provide a forum to discuss risk assessment needs and expectations of stakeholders across disciplines and domains, and together find solutions to address the complexity of risk analysis for nanomaterials.

Participants will:

- **Share lessons:** facilitating mutual learning amongst experts and stakeholders in an interdisciplinary and inter-domain fashion.
- **Identify priorities:** ensuring most urgent scientific information needs and regulatory issues are integrated in policy research agenda, in support to regulatory oversight and compliance.
- **Promote harmonization:** finding common solutions to relevant topics such as data gaps, test guidelines and harmonization of methods.
- **Identify operational research agendas:** translate nano-specific issues in inputs for research agendas, funding mechanisms and other incentives to support and further develop risk analysis approaches, knowledge and data.

This forum is part of a longer term initiative to build greater interaction across domains and disciplines within regulation and will create a mechanism through which regulatory stakeholders can share priorities, learnings and good practice.

Who should attend? Policy makers, regulatory bodies, companies and other stakeholders involved in managing novel and emerging risks. Participants are encouraged from a broad spectrum of disciplines. The forum will be highly interactive and participants should have sufficient risk management, regulatory and policy experience to be able to contribute to discussions.

Venue: We invite you as an expert in risk assessment to participate in the Regulatory Risk Assessors Summit under Gov4Nano. RIVM, coordinator and partner in Gov4Nano, hosts this workshop for participants from different regulatory domains, disciplines and organisations.

Where and When: RIVM, Bilthoven (The Netherlands) 4-5 December, 2019

Save the Date and Registration: The organizing committee will ensure a balanced representation of risk assessors from different domains, disciplines, background, organisations and countries. Places are limited to 60 and applicants will be requested to summarise briefly their experience, with Gov4Nano reserving the right to prioritise delegate places to applicants that meet the capabilities above.

Registration link: https://www.formdesk.com/rivm/Gov4Nano-RRAS-2019

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

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/

2nd Edition of World Nanotechnology Conference

worldnano@magnusmeetings.com

Magnus Group takes prodigious pleasure to invite you to participate in the '2nd Edition of World Nanotechnology Conference' scheduled on April 27-29, 2020 in Baltimore, USA.

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.

Website address: https://worldnanotechnologyconference.com/

Nanotechnology 2020 Scientific Sessions:

1. Nanoscience and Technology

Sustainability Nanotechnology; Drug Delivery and Nano Particles; Molecular Nanotechnology; Bionanoscience; Lipid Nanoparticles; Nanofliuidics and Nanoionics; Nanobiopharmaceutics

2. Nanobiotechnology & Nanosafety

a. Nanobiotechnology : Impact of Nanobiotechnology; Regulations of Nanobiotechnology; Roller Nanoimprint; Electron Projection Lithography; Ultrafast Nanoimprint; Nanobiomolecular Engineering
b. Nanosafety: Genetic sequence using DNA-tagged gold nanoparticles; Nanotechnology Regulations; Carbon Nanotube Filters; Strategic and Nuclear Disarmaments; Disaster Management

3. Life Sciences & Nanomedicine

Medical Technology; Nano-diagnostics, Imaging and nano-therapy techniques; Cell Repair therapy; DNA Nanotechnology; Biomarkers and Biosensors; Measurement of Health Risk; Nanoproteomics and genomics; Protein Nanocrystallography; Organ-on-a-chip

4. Nanocharacterization & Nanomanufacturing

Nano Tribology; Nano Sensors and Actuators; Nanoscale Particles Microscopy; Quality of Nanosystem; Regulatory aspects towards Approval of Nanomedicine and nanostructures

5. Nanochemistry & Wet Nanotechnology

Graphene & Fullerenes; Medicinal Nanochemistry ; Nanotechnology in clothing ; Brownian motion in wet nanotech; Hydrophobic Nanotechnology

6. Energy and Environment

Novel Generation in Energy storage; Nonnuclear Materials; Oil & Gas; Nano-energy; Nano Solar Cells; Nanofuels; Nano Batteries; Nano fibers

7. Nanoelectronics and Nanophotonics

Nanoelectronic Biomedical Devices; Nanofabrication; Molecular electronics; Nanotube transistors; Modern optics; MEMS and NEMS Devices; Micro/ Nanolithography and MOEMS; Quantum dot; photodetectors; Surface micromachining

/WorldNano2020 cntd...

8. Green Nanotechnology & Water Treatment
Nanotechnology in Water Treatment; Water purification Technology; Nanoremediation & water treatment; Water filtration ; Nanosorbents water treatment; Nanotech in disinfected water

9. Nanotech : in other fields
Computer Sciences ; Environmental Sciences ; Household Nanotechnology; Biomedical Sciences; Agricultural research; Food Industry

10. Nanomaterials, biomaterials & synthesis
Materials Chemistry (Organic & Inorganic); Advanced Functional Materials; Nano Materials Synthesis and Characterisation; Microporous and Mesoporous Materials; Materials Science and Engineering Physics; Advanced Nanomaterials; Nanobiomaterials; Nano Composites; Graphene and its Applications; Polymer Nanotechnology; The biosynthesis of metals

11. Pharmaceutical nanotechnology
Nano Pharmaceuticals; Biopharmaceutics and Liposomes; Nano Drug Delivery; Synthesis & exhaustive characterisation of Pharmaceutical nanoparticles; Biological evaluation
Clinical testing and/or toxicological assessment

12. Nano Engineering
Nano Robotics; Nano Devices; Nano Sensors

13. Carbon nanotechnology
Carbon nanotubes formation and characterization; Properties of Nanotubes; Polymer-carbon; nanocomposites to sensors; Purification and separation of carbon nanotubes and related aspects; Nano Electron emitters; Molecular electronics

14. Nano computational modeling
Computational Modelling of Photonic Nanomaterials and devices; Catalytic Cycles and Reactions
Stochastic motion of Nanomotors; Optimisation Nanostructures; Molecular Modelling and simulation of Nanoscale systems; Foundation of Nanoscale Physics and Modelling

15. Nanotoxicology
Toxicological assessment of manufactured Nanoparticles; Effects of Nanotoxicology in Nanomaterials; Impacts of Nanoparticle design in Nanotoxicology; Different types of Nanotoxicology
Reduction in toxicity while maintaining therapeutic effects

16. Nanometrology
a. Microfluidics and Nanofluidics: Microscopy; Nanotribology; Nano coordinate measuring machine measurement techniques; Surface area measurement

17. Nanotechnology Applications
Nanotechnology in Cancer Treatment; Nanotechnology in Tissue Engineering; Nanostructured materials for construction; Nanotechnology in Space; Nanotechnology in Food manufacturing

Links
https://worldnanotechnologyconference.com/submit-abstract
https://worldnanotechnologyconference.com/register
https://www.facebook.com/paul.lackmann.56
https://twitter.com/WorldNanoConf

7th International Conference—NANOSAFE 2020

November 16th-20th, 2020

Maison Minatec, Grenoble, France

Organized every two years since 2008, the NANOSAFE Conference is intended for sharing latest research results on health and safety issues related to nanomaterials and beyond for a socially responsible approach. This special edition will be organized in partnership with the Labex SERENADE with the ambition to cover the newest findings concerning Safer- and Eco-Designed innovative nanomaterials.

More information on our website:

www.nanosafe.org

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

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

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

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

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

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