Drittmittelgeberanalyse – EU Programme

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Inhalt

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Research Interests:

Nanomaterialien: Synthese u. Anbindung an Oberflächen von Gold-Nanopartikeln, Silber-Nanopartikeln, Silica-Nanopartikeln, Hydroxylapatit Nanopartikeln, Nano- o. Mikrogele, Nano- und/oder Mikrostrukturierungen auf Oberflächen (nano- and micro-patterning), Strukturierung von Elastizitäten (z.B. Mikrostrukturierung von PEG Hyrogelen, die unterschiedliche Elastizitäten aufweisen)
Biomaterialien: Polyethylene Glykol (PEG) basierte Hydrogele, Synthese und Funktionalisierung von PEG Hydrogelen o. Polymeren, Interaktionen von Proteinen und/oder Zellen mit Oberflächen, Zelladhäsion, -migration u. -proliferation, in-vitro Studien zu Wundheilung (Tissue Engineering) oder Knochenheilung, Zellarten (Fibroblasten u. Osteoblasten)
Mögliche Anwendungen von Gold u. Silberpartikeln auf Hydrogelen z.B. als Biosensoren, surface enhanced Raman Spektroskopie (SERS), surface plasmonen resonance (SPR), photothermische Therapie; Charakterisierung von Nanopartikeln o. Oberflächen: Elektronenmikroskopien (SEM, TEM), Atomkraftmikroskopie (AFM), Fluoreszenzmikroskopie, Lichtmikroskopie, UV-Vis-Spektroskopie
Toxikologie: Cyto-toxikologie, in Vitro Messungen (keine Tierversuche), Fluoreszenzfärbung von Zellen,
Weitere Stichworte: Zellkultur, Oberflächenstrukturierung, Hydrogele, Polymere, Photonic, Plasmonic,

H2020 – WP Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing

DT-NMBP-01-2018: Open Innovation Test Beds for Lightweight, nano-enabled multifunctional composite materials and components (IA)

Specific Challenge:

The field of new smart lightweight nano-enabled materials has made remarkable progress in recent years. Many different types of materials, with radically enhanced properties and functionalities, are today available for a wide range of industrial applications; e.g. lightweight solutions for transportation and construction, enhanced properties for packaging materials and processes, incorporating smart interacting sensors or indicators, and materials offering enhanced electrical performance and reliability, high-performance thermal and/or electrical conductivity, and UV shielding. The challenge is to scale up and enable industry and users, in a cost-effective and sustainable way, to develop, test, and adopt new lightweight, high performance, multifunctional, and environmentally friendly materials for high-value composite components and structures.

Scope

- Open Innovation Test Beds should upgrade or develop materials facilities and make available to industry and interested parties, including SMEs, services for the design, development, testing, safety assessment, and upscaling of specific materials compositions, including nano-particle/objects;
- Attention should be given to materials new functions, features, capabilities, and properties (functionalisation), and to processing techniques and optimisation of process parameters, from uniform dispersion and distribution of nano-particles within the materials (or nanoparticle aggregates) to the association of dissimilar materials;
- Potential regulatory, economic and technical barriers should be identified and assessed;
- A methodology for providing open access at fair conditions and cost as well as outreach and dissemination across Europe;
- Quality control processes and tools should be validated to allow on-line quality controls;
- Materials should be demonstrated in relevant industrial environments.

Proposals submitted under this topic should include actions designed to facilitate cooperation, across Europe, with other projects; to enhance user involvement; and to ensure the accessibility and reusability of data produced in the course of the project.

From TRL 4 to TRL 7 (end of the project).
EU recommended budget/project: EUR 7 and 15 million.

Expected Impact

- Open and upgraded facilities at the EU level for the design, development, testing, safety assessment, and upscaling of lightweight, nano-enabled and multifunctional materials and components, easily accessible to users across different regions of Europe;
- Attract a significant number of new SME users, with at least a 20% increase for existing test beds;
- Increased access to finance (for SMEs in particular) for investing in these materials or in applications using them;
- At least 15% improved industrial process parameters and 20% faster verification of materials performance for highly promising applications;
- At least 20% improvement in industrial productivity, reliability, environmental performance, durability, and reduction of life-cycle costs of these materials;
- At least 15% indirect reduction in energy consumption across sectors using lighter materials in their products and processes.

Relevant indicators and metrics, with baseline values, should be clearly stated in the proposal.

	Type of Innovation action
Timeline	23 Jan 2018 (1st stage), 28 Jun 2018 (2nd Stage)
Source	http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-leit-nmp_en.pdf

NMBP-14-2018: Nanoinformatics: from materials models to predictive toxicology and ecotoxicology (RIA)

Specific Challenge:	Despite the significant amounts of data on physico-chemical and toxicological and ecotoxicological properties of nanomaterials generated over the last decades, detailed knowledge on how these properties are linked to specific physico-chemical characteristics is only beginning to emerge. The challenge is to develop and implement modern methods, more cost effective and less reliant on animal testing, for toxicity investigations in each stage of product innovation, through making best use of joining existing and emerging data with the help of progress in nanoinformatics.
Scope	• Development of models that support the prediction of both specific functionalities and hazard and are crucial to establish safe-by-design principles at early stages of material development; • Development of a sustainable multi-scale modelling framework, based on the integration/linking of different types of nanoinformatics models in order to advance towards predictively linking of physico-chemical NM property models to NM functionality and hazard; • Uptake and valid use of these tools and nanoinformatics models, user-friendly interfaces to enhance accessibility and usability of the nanoinformatics models, and clear explanations of their applicability domains, especially regulatory compliance, should be provided for different stakeholders (industry, regulators, and civil society). International cooperation is particularly encouraged. *From TRL 4 to TRL 6 (end of project)* *EU recommended budget/project: around EUR 6 million*
Expected Impact	• Reliable nanomaterials safety data systems, models and strategies to allow material characteristics to be linked to adverse outcomes; • A validated accessible framework, designed to predict human and environmental toxicological hazards; • Increased confidence in nanosafety nanoinformatics predictive models through agreed standards, harmonised standard operating procedures, considering OECD validation principles. Type of Action: Research and Innovation action
Timeline	23 Jan 2018 (First Stage), 28 Jun 2018 (Second Stage)
Source	http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-leit-nmp_en.pdf

NMBP-22-2018: Osteoarticular tissues regeneration (RIA)

Specific Challenge:	EU demographic change requires innovation to enhance active ageing, whereby a growing market for osteoarticular tissue regeneration is created. To reduce patients' sufferings, mitigate the economic burdens to health systems and exploit market opportunities it is crucial to conceive innovative designs and development of innovative biomaterials that enables the delivery of smart, nanostructured and functionalised tissues to regenerate and integrate bones, cartilages, tendons and joints.
Scope	To design and develop user-centred innovative and smart nanobiomaterials which may be also adaptable to remote control, that will lead to a personalised regeneration of

	osteoarticular tissues (bones, cartilages, tendons, joints). The nanobiomaterials should be designed to perform in host tissues affected by severe degenerative and/or inflammatory processes, which typically characterise Osteoarticular pathologies. Proposals should cover at least one of the following technologies, leading to a convergence of processes: (i) 3D-bioprinting; (ii) stem cells seeding, recruiting, activation, functionalisation, and cell printing; (iii) nano functionalisation; (iv) 3D-printable biophoto-polymerisation; (v) use of light to expose/mask tethered signalling molecules, incorporating immune-modulatory materials such as complement regulators; (vi) additive manufacturing by laser sintering, rapid prototyping technologies, stereolithography, inkjet techniques; (vii) relevant cross-cutting KETs; (viii) electrospinning. The research design should be developed by means of a multidisciplinary approach and involve relevant stakeholders. As relevant, proposals should consider sex and gender specific aspects. Proposals submitted under this topic should include actions designed to facilitate cooperation with other projects; to enhance user involvement; and to ensure the accessibility and reusability of data produced in the course of the project. *From TRL 3 to TRL 5 (end of project)* *EU recommended budget/project: EUR 4 to 6 million*
Expected Impact	• Alleviate heavy burdens on patients and healthcare systems by developing smart nano-engineered affordable biomaterials for tissue self-healing and regeneration; improve the well-being, health, quality of life and active ageing of populations; • Boost industrial competitiveness and leadership of EU companies in personalised bio-intelligent materials responding to patients' clinical specificities; • Enhanced incorporation of digitalisation and Internet of Things for innovative and affordable biomaterials; • Increase EU attractiveness for the clinical development of regenerative medicine; • Reinforce the EU sector ecosystem to generate new markets and opportunities for SMEs, translating innovative biomaterials into pre-clinical tests for market uptake. Relevant indicators and metrics, with baseline values, should be clearly stated in the proposal.
Timeline	23 Jan 2018 (1st Stage) 28 Jun 2018 (2nd Stage)
Source	http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-leit-nmp_en.pdf

DT-NMBP-03-2019: Open Innovation Test Beds for nano-enabled surfaces and membranes (IA)

Specific Challenge:	Nano-enabled surfaces and membranes have a vast range of applications in final products across many industry sectors. The challenge is to enable a cost effective and sustainable industrial upscaling and deployment of nano-enabled surface and membrane technologies, including thin film architecture, coating, surface structuration for improved properties (optical, surface energy, durability, reduced friction, etc.), and nanostructured membrane's functionalities. This will require the integration of state-of-the-art nano-scale processes for modification, functionalisation, and structuring/coating of surfaces or membranes.
Scope	• Open Innovation Test Beds should upgrade or develop materials facilities and make available to industry and interested parties, including SMEs, services for the design, development, testing, safety assessment, and upscaling of new nano-enabled surfaces • New materials functionalities may include, among others, improved scratch and abrasion resistance, super hardness and mechanical resistance, improved corrosion, wear and friction properties, bio-functionality, bio-compatibility, control of

	reflectivity, sensing ability, self-cleaning, antimicrobial, permeability and selectivity properties; • Open access at fair conditions and cost as well as outreach and dissemination across Europe, based on a distinct methodology; • Applications can cover industrial as well as consumer products. Potential regulatory, economical and technical barriers should be identified and assessed; • Quality control processes and tools should be validated to allow on-line quality controls; • Materials should be demonstrated in relevant industrial environments; • Proposals submitted under this topic should include actions designed to facilitate cooperation, across Europe, with other projects and existing Pilot Lines; to enhance user involvement; and to ensure the accessibility and reusability of data produced in the course of the project. *From TRL 4 to TRL 7 (end of the project)* *EU recommended budget/project: EUR 7 to 15 million*
Expected Impact	• Open and upgraded facilities at the EU level for the design, development, testing, safety assessment, and upscaling of nano-enabled surfaces and membranes; • Attract a significant number of new SME users, with at least a 20% increase for existing test beds; • Increased access to finance (for SMEs in particular) for investing in these nano-enabled surfaces or membranes or in applications using them; • At least 15% improved process parameters and 20% faster verification of nano-enabled surfaces or membranes performance for highly promising applications; • At least 20% improvement in industrial productivity, reliability, environmental performance, durability, and reduction of life-cycle costs of these nano-enabled surfaces or membranes; • At least 15% indirect reduction in energy consumption for applications using novel nano-enabled surfaces or membranes. • Relevant indicators and metrics, with baseline values, should be clearly stated in the proposal.
Timeline	Opening: 16 Oct 2018; Deadlines: 22 Jan 2019 (1st Stage), 03 Sep 2019 (2nd Stage)
Source	http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-leit-nmp_en.pdf

DT-NMBP-18-2019: Materials, manufacturing processes and devices for organic and large area electronics (IA)

Specific Challenge:	Europe is a leader in the development of materials for organic and large area electronics (OLAE) but the materials still need to be improved to maintain this position. In addition, there have been attempts to combine dissimilar manufacturing technologies in order to achieve seamless integration of the new technology into traditional products at constant/lower production cost and in a new generation of smart devices.
Scope	Activities should include material development and improvement (electrical performance, processability, stability and lifetime during device operation), as well as prototyping of advanced OLAE based electronic products. New materials and process development should cover all of the following: Combine materials with high uniformity and with high mobility in industrial quantities with high reproducible quality; • Improved environmental stability to enable operation in more robust environments and to reduce barrier requirements; • Seamless integration of the new technology into traditional and new products; • Advance the TRL of OLAE and enhance its manufacturability including high speed

	processes for the integration of flexible OLAE components onto flexible substrates; • Cost reduction for the structuring and processing of organic electronic materials into device structures; • Demonstration of OLAE-enabled prototypes in selected applications of flexible and wearable electronics. *From TRL 3 to TRL 5 (end of the project)* *EU recommended budget/project: EUR 4 to 5 million*
Expected Impact	• New products based on the combination of printed and OLAE processed electronics in flexible and wearable electronics; • Improvement in cost competitiveness, lifetime and processability as well as manufacturing capability for OLAE materials and electronics; • Improved environmental stability, water vapour transmission rates < 10-6 gm-2 d-1 at 20°C/50% RH and oxygen transmission rates < 10-6 cm3 m-2 d-1 bar-1, of organic electronic materials for products. Improved printable commercial material charge carrier mobility > 5 -10 cm2/Vs; • Improved business opportunities and value creation in Europe by strengthening cooperation along the value chain as demonstrated by prototypes at TRL 5 that are taken to early-concept market trials with market introduction of new products in 2-4 years after project completion. Relevant indicators and metrics, with baseline values, should be clearly stated in the proposal. This topic will be co-funded by LEIT-NMBP and LEIT-ICT, for a total budget of EUR 20 Mio.
Timeline	Opening: 16 Oct 2018; Deadlines: 22 Jan 2019 (1st Stage), 03 Sep 2019 (2nd Stage)
Source	http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-leit-nmp_en.pdf

DT-NMBP-04-2020: Open Innovation Test Beds for bio-based nano-materials and solutions (IA)

	Die Ausschreibung ist für 2020 angekündigt, aber noch nicht spezifiziert. Dies wird voraussichtlich Ende 2018 erfolgen.
Timeline	tbd
Source	http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-leit-nmp_en.pdf

NMBP-21-2020: Custom-made biological scaffolds for specific tissue regeneration and repair (RIA)

	Die Ausschreibung ist für 2020 angekündigt, aber noch nicht spezifiziert. Dies wird voraussichtlich Ende 2018 erfolgen.
Timeline	tbd.
Source	http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-leit-nmp_en.pdf

H2020 – Societal Challenge 1 – Health

SC1-BHC-27-2018: New testing and screening methods to identify endocrine disrupting chemicals (RIA)

Specific Challenge

There are a variety of natural and anthropogenic chemicals that can produce adverse effects via a disruption of the body's endocrine (hormone) system, referred to as endocrine disruptors (EDs)106. EDs are of increasing importance in chemical regulations in the European Union, and criteria to identify EDs have recently been presented for two pieces of EU legislation (Biocidal Product Regulation and Plant Protection Products Regulation)107.

In the EU, the legislation regulating chemical substances often includes their screening and testing according to the EU test methods regulation108, which predominantly contains test methods developed under the OECD109. The current testing tools, including regulatory in vivo tests and novel in vitro assays, do not appropriately identify effects related to certain less studied endocrine-mediated pathways or health outcomes, in which EDs may be implicated. Moreover, the new ED criteria require information about both the adverse effects and the endocrine mode of action.

Scope

New and improved approaches are needed to increase the quality, the efficiency and the effectiveness of existing methods to meet demanding and evolving regulatory requirements worldwide. In consultation with relevant regulatory bodies, research should improve and harmonise screening and testing protocols/strategies and hazard/risk assessments by developing better and faster tools, test methods or models, including in vitro and in vivo tests, high-throughput and in silico methods (e.g. QSAR), potentially combined with research on adverse outcomes pathways. For in vitro tests, appropriate coupling of their results to human health effects should be ensured. Information is also needed as regards how epidemiological and field monitoring data, which are also to be considered as data sources in a regulatory context, can be used to gain information about possible associations between levels of exposure to specific chemicals and ED-related effects. Focus should be on the most urgent regulatory needs, e.g., methods addressing the thyroid axis, developmental neurotoxicity, metabolic disorders, female reproduction and non-genotoxic carcinogenicity. Proposals should involve, in addition to academic researchers, regulatory agencies and other actors as appropriate. Proposers should consider sex and gender analysis when relevant. International cooperation is essential. Proposals are required to describe how they will contribute to ongoing international ED related activities (e.g. OECD work, EU level databases), including decision schemes under development. To speed up regulatory uptake of tests, validation is an essential step to be included in the proposals.

Collaboration between successful proposals will be encouraged.

Proposals could consider the involvement of the European Commission Joint Research Centre (JRC) as an added value in order to provide an effective interface between the research activities and regulatory aspects and/or to translate the research results into validated test methods and strategies fit for regulatory purpose. In that respect, the JRC will collaborate with any successful proposal.

EU recommended budget/person: EUR 4 to 6 million

Expected Impact

- Improved hazard and risk assessment of EDs, including in the workplace.
- Novel ED assay candidates for regulatory use.
- Support for the OECD work on testing and assessing chemicals for ED identification.
- Enhanced international cooperation.
- Contribution to the development of an international strategy and guidelines for testing EDs and assessing associated hazard and risk.

Type: Research and Innovation action

Timeline

Ausschreibung bereits geöffnet; *deadline*: 18 Apr 2018

Source

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

ERA Net – EuroNanoMed3 (ENM)

"European Innovative Research & Technological Development Projects in Nanomedicine"

Aim of the call

- To support translational research projects that combine innovative approaches in the field of nanomedicine and;
- To encourage and enable transnational collaboration between public and private research groups from academia (research teams from universities, higher education institutions, public research institutions) and clinical/public health research (research teams from hospital/ public health, healthcare settings and other healthcare organisations) or research teams from industrial enterprises (all size). The participation of Medical Doctors and SMEs (Small and Medium-size Enterprises) is strongly encouraged. Please note that, for some funding organizations, industrial enterprises are not eligible for funding.

Project proposals will address multidisciplinary and translational research. The project proposals must cover at least one of the following areas that are equal in relevance for this call:

a) Regenerative medicine
b) Diagnostics
c) Targeted delivery systems

The projects should fall within Technology Readiness Levels (TRL)1 3-6, although for being realistic and coherent with the characteristics of the call, projects should propose advancements for a maximum of two TRL levels during their lifetime. TRL level must be understood as the level achieved by the end of the three-year-project. Industry engagement should be appropriate for the TRL range being investigated.

For a better understanding of the objectives and a more efficient evaluation, applicants are asked to specify to which of the two categories described below the project falls, according to its TRL, degree of innovation and expected time to market:

1) Innovation applied research projects: Proof of concept projects for innovative applications with analytical/experimental research and/or implementation and integration of components and test in laboratory and/or animal models. Safety and nanotoxicity should be taken into account when relevant. The viability of a path that may lead the experimental and/or analytical results (for TRL 3) and/or demonstrators (for TRL 4) to a future application at medium/long term shall also be demonstrated.
2) Projects with high potential of applicability at short/medium term: Projects closer to the market for the validation of demonstrators and prototypes in a realistic laboratory (for TRL 5) and/or relevant simulated operational field environment (for TRL-6). The viability of a path that may lead the validated systems and results to real products shall be demonstrated. Industrial engagement is crucial in this type of projects. Medical regulatory aspects have to be properly considered.

In both categories (1 and 2) it is highly recommended to underline the technical risks and required effort to advance to the next TRL levels, as an assessment of the level of development achieved at the end. Performance indicators must be proposed to evaluate it.

<u>Proposals may include, but are not limited to</u>: identification, characterisation and validation of biomarkers, early diagnosis, convergence of nanotechnology and stem cell technology, cell biology applied to nanomedicine, multimodal imaging agents or techniques, point of care diagnostics (on site sensors), standardised procedures for preparation & characterisation of drug delivery systems, regenerative, gene or cell therapies using nanotechnology and development and use of nanomaterials for medical purposes. Pre-clinical and early clinical studies are eligible subject to national/regional regulations.

Proposals must clearly demonstrate the potential health impact and/or economic impact as well as the added-value of transnational collaboration: sharing of resources (models, registries, diagnosis, etc.), harmonisation of data, sharing of specific know-how and/or innovative technologies.

	Please check the full call text: http://www.euronanomed.net/wp-content/uploads/3.ENMIII_2018_Call_text_02Dec2017.pdf
Timeline	Open since Dec 14, 2017; deadline: 16 Jan 2018 (1st Stage), 24 May 2018 (2nd Stage)
Source	http://www.euronanomed.net/joint-calls/9th-joint-call-2018/

ANMERKUNG: DIE AKTUELLE AUSSCHREIBUNG, BZW. STUFE 1 SCHLIEßT LEIDER BEREITS IN KÜRZE. DAS ERA NET **EURONANOMED3** LÄUFT NOCH BIS 2021 MIT JÄHRLICHEN AUSSCHREIBUNGEN. DIE NÄCHSTE AUSSCHREIBUNG ÖFFNET VORAUSSICHTLICH IM **DEZEMBER 2018**.

RECHERCHIERT WURDEN U.A. FOLGENDE ARBEITSPROGRAMME:

HORIZON 2020

- Leadership in Enabling Technologies (LEIT) - Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing
- Societal Challenge (SC) 1 – Health, demographic change, wellbeing
- SC2 - Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy
- SC5 – Climate action, environment, resource efficiency and raw materials

(Overview of Work Programmes 2018-20: http://ec.europa.eu/research/participants/portal/desktop/en/funding/reference_docs.html#h2020-work-programmes-2018-20)

European Research Area - ERA Nets (via ERA Learn) hier: u.a.

- EuroNanoMed3
- PhotonicsSensing

3rd Health Programme: websites: https://ec.europa.eu/health/programme/policy_en und im Participant Portal