H2020 2018-2020 CALL SELECTION LEIT-NMBP DRAFT WP

TOTAL CALLS	CODE	TOPIC/NAME	TYPE OF ACTION	TRL		BUDGET OF CALL	SUGGESTED PROJECT BUDGET	STAGE	OPENING DATE	DEADLINE
12				FROM	TO					
	DT-NMBP-03	**Open Innovation Hubs for nano-enabled surfaces and membranes**	IA	4-5	7	50	7-15		15 Oct 2918	
	BIOTEC-01	**Standardisation in Synthetic Biology**	CSA			45	1		15 oct 2017	
	CE-BIOTEC-04	**New biotechnologies for environmental remediation**	RIA	3	5	45	5		15 Oct 2017	
	CE-SPIRE-03	**Energy and resource efficiency in highly energy intensive industries**	IA	4	7	99	8-12		15 Oct 2017	
	CE-SPIRE-07	**Recovery of industrial water, thermal energy and substances contained therein**								
	LC-EeB-01	**Integration of energy smart materials in non-residential buildings**	IA	5	7	65	4-6		15 Oct 2018	
	DT-NMBP-01	Open Innovation Hubs for Lightweight nano-enabled multifunctional materials and components	IA	4-5	7	75	7-15		15 Oct 2017	
	DT-NMBP-12	Sustainable Nano-Fabrication	CSA			65	4		15 oct 2018	
	NMBP-14	Nanoinformatics: from materials models to predictive toxicology and ecotoxicology	RIA	4	6	72	6		15 oct 2017	

	DT-NMBP-18	Materials, manufacturing processes and devices for organic and large area electronics (IA)	IA	3	5	30	20		15 Oct 2018	
	BIOTEC-03	Synthetic biology to expand diversity of nature's chemical production	RIA	3	5	45	6-8		15 Oct 2017	
	CE-SPIRE-05	Adaptation to variable feedstock through retrofitting	IA	5	7	99	8-12		15 Oct 2018	

DT-NMBP-01-2018: OPEN INNOVATION HUBS FOR LIGHTWEIGHT NANO-ENABLED MULTIFUNCTIONAL MATERIALS AND COMPONENTS (IA)

Scope:

- Open Innovation Hubs should upgrade or develop materials facilities and make available to industry and interested parties 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, economical and technical barriers should be identified and assessed.
- Quality control processes and tools must be validated to allow on-line quality controls.
- Materials should be demonstrated in relevant industrial environments.

Bio-based materials and/or the building sector are excluded from this call.

BIOTEC-01-2018: STANDARDISATION IN SYNTHETIC BIOLOGY (CSA)

Scope: The proposal will be based on equivalent standardisation experiences that can be imported into the biological realm along with a thorough analysis of the functions of live systems that can be amenable to standardisation, generating new approaches where previous experiences do not apply. It will involve a dialogue with experts of the relevant disciplines on the necessary steps to set up principles for understanding, measuring, refining and, to the extent possible, standardizing the engineering of biological systems in support of their broad application in different industrial sectors. Standardisation will be considered in the following fronts: designation of the component/part, specifications, methodologies involved and assembly. The proposal will take into consideration worldwide actions to create synergies and partnerships between leading EU and international scientists, engineers and industrialists.

The proposal will address Social Sciences and Humanities (SSH) elements regarding public perception of synthetic biology, its ethical dimensions and the environmental impact of products issued from synthetic biology research.

CE-BIOTEC-04-2018: NEW BIOTECHNOLOGIES FOR ENVIRONMENTAL REMEDIATION (RIA)

Scope: Proposals will include research and innovation for efficient and low cost remediation strategies using microorganisms by means of bio-electromechanical systems or alternate systems that require minimum or zero external energy or chemicals. Innovative research will be proposed to ensure that an acceptable performance for field applications can be attained. Remediation will focus on hydrocarbons and their derivatives, metals, nutrients, antibiotics or micropollutants. Moreover, the system developed will encompass the removal of different contaminants, including complex ones, the remediation time will be accelerated and it will work with mixed microbial communities.

Proposals must include cooperation with China.

CE-SPIRE-03-2018: ENERGY AND RESOURCE EFFICIENCY IN HIGHLY ENERGY INTENSIVE INDUSTRIES (IA)

Scope:

- Innovative production technologies allowing flexibility in terms of raw material and intermediate or final products are expected to be developed. They have, at the same time, to consider quality of the main products and by-products in view of their valorisation through re-use and recycle.
- Novel advanced energy systems, could include new combustion and gasification techniques applied to the highly resource and energy industries have to be developed;
- New developments should clearly indicate how the use of sustainable electrical energy sources could be integrated and contribute to industrial efficiency, also addressing the challenges of using a fluctuating energy input. These actions have to bring a significant impact on the sustainability profile of the process and/or the final products.

The proposals need to consider the following elements:

- treatment technologies and process integration solutions allowing a significant reduction as well as the valorisation, re-use and recycling of by-products and waste streams (solid, liquids and gaseous);
- system, process modelling and integration (up and down-stream) within the plant operation terms or symbiosis concepts, improving energy and raw materials efficiency, and minimising the global impact on the environment of the whole value chain. Taking also into consideration

optimisation at a plant/system level. The activities have to be supported by a quantitative LCA analysis;

LC-EEB-01-2019: INTEGRATION OF ENERGY SMART MATERIALS IN NON-RESIDENTIAL BUILDINGS (IA)

Scope: The development of lightweight pilot components based on high-efficiency insulation materials needs adding active energy management capabilities without increasing weight. Proposals should address all of the following:

- development of lightweight components for the construction of building envelopes with integral means for combined active/passive management of energy transfer, i.e., for active insulation, heath diversion, storage and directional transfer;
- solutions capable for use in both new buildings and for retrofitting existing ones;
- solutions allowing for installation without modifying the structure of the building (or without overloading existing structures) and demonstrating a high replication and industrial potential;
- modelling of the materials and components as well as to the development of novel testing methodologies oriented towards assessing the long-term performance of the elements. This should include the estimation of durability and service life;
- reduced maintenance costs, possibility of use in an ample range of environmental conditions, favour renewable resources, respect of sustainability principles (International Reference Life Cycle Data System - ILCD Handbook), and the possibility of reuse at the end of service life.

DT-NMBP-03-2019: OPEN INNOVATION HUBS FOR NANO-ENABLED SURFACES AND MEMBRANES (IA)

Scope:

- Open Innovation Hubs should upgrade or develop materials facilities and make available to industry and interested parties services for the design, development, testing, safety assessment, and upscaling of new nano-enabled surfaces and membranes.
- New materials functionalities may include, among others, improved scratch and abrasion resistance, super hardness and mechanical resistance, improved corrosion, wear and friction properties, bio-compatibility, control of reflectivity, sensing ability, self-cleaning, permeability and selectivity properties.
- 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 must be validated to allow on-line quality controls.

- Materials should be demonstrated in relevant industrial environments.

DT-NMBP-12-2019: Sustainable Nano-Fabrication (CSA)

Scope:

- Establish a network of EU laboratories that will manage information and communication among its members in the technical domains such as nano-synthesis, additive nanomanufacturing, nanostructure assembly, roll-to-roll nanofabrication, etc.
- Address research and new standards for non-bulk nanoparticles, nanomaterials, components, devices and processes. Establish common approaches for nomenclature, metrology, measurements and characterisation applied for nanomaterials by design, three-dimensional nanostructures, multi-layer nanodevices, multi-material and multifunctional nanosystems, dynamic nanosystems, etc.
- Provide access to infrastructure and jointly address sustainability in terms of human health, ethics, environment, life-cycle analysis. Provide services to SMEs.
- Address development of the necessary skills for this new industry.

NMBP-14-2018: NANOINFORMATICS: FROM MATERIALS MODELS TO PREDICTIVE TOXICOLOGY AND ECOTOXICOLOGY (RIA)

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 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 models, user-friendly interfaces to enhance accessibility and usability of the models, and clear explanations of their applicability domains must be provided for different stakeholders (industry, regulators, and civil society).

DT-NMBP-18-2019: MATERIALS, MANUFACTURING PROCESSES AND DEVICES FOR ORGANIC AND LARGE AREA ELECTRONICS (IA)

Scope: Activities should include material development and improvement (electrical performance, processibility, 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 high uniformity 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.

BIOTEC-03-2018: SYNTHETIC BIOLOGY TO EXPAND DIVERSITY OF NATURE'S CHEMICAL PRODUCTION (RIA)

Scope: Proposals will consist of the bioengineering of the genome of organisms (e.g. yeast, algae, bacteria) to be used in industrial processes and will lead to the design and synthesis of naturally unavailable and efficient pathways for the production of new complex and high value added chemicals for the pharmaceutical, agricultural or material sectors. Emerging synthetic biology techniques (engineering of large genomic regions, synthetic regulation for the control of gene expression and gene editing, among others) can be combined with knowledge of synthetic chemistry, systems biology and bioinformatics.

CE-SPIRE-05-2019: ADAPTATION TO VARIABLE FEEDSTOCK THROUGH RETROFITTING (IA)

Scope: The proposals need to consider the following elements:

- implementation of simulation models and decision support tools for the production chain in an energy intensive sector, including the detection of inefficiencies, in order to allow flexibility with respect to variable feedstock while addressing energy efficiency and product quality;
- The development of tools and methodologies to streamline and support retrofitting.
- Find the most efficient operational input conditions to optimise the performances;

- Develop indicators to modify input variables and its potential of replication across thE industry;
- Facilitate and adapt the equipment towards a larger number and more diverse feedstock in order to be ready for a transition in which fluctuation in quantity and rice of feedstock are key to make the production competitive and sustainable;
- Solutions should demonstrate the feasibility and retrofitability of the concepts at industrial scale.

Demonstration of the technology in different process industries should be undertaken, focussing both on the technology (new 'plug-ins'), as well as on the process control (higher variability of the process requires new Monitoring & Control Systems).