



# M-ERA.NET Call 2018

## Guide for Proposers

## Content:

1. What is M-ERA.NET .....	4
2. Structure of the M-ERA.NET Call 2018 .....	6
3. Call Announcement .....	8
3.1. Objectives and Topics.....	8
3.2. Funding rules .....	8
3.3. Eligible project structure.....	9
3.4. Project budget .....	10
3.5. Project duration .....	10
3.6. Dates and deadlines .....	10
4. Application process .....	11
4.1. Stage 1: M-ERA.NET Pre-Proposal .....	12
4.2. Stage 2: M-ERA.NET Full-Proposal (and national/regional funding applications) .....	12
4.3. Confidentiality .....	12
5. Evaluation .....	13
5.1. Pre-Proposal: .....	13
5.1.1 Eligibility check and evaluation criteria: .....	13
5.1.2. Result of Pre-Proposal assessment:.....	14
5.2. Full-Proposal: .....	14
5.2.1 Eligibility check:.....	14
5.2.2. Result of Full-Proposal eligibility check: .....	15
5.2.3. Evaluation of Full-Proposal: .....	15
6. Decision .....	16
6.1. Decision process .....	16
6.2. Funding.....	16
6.2.1. Contract .....	16
6.2.2. Payments and Start of projects .....	16
7. Monitoring.....	16
7.1. National/regional project review .....	16
7.2. M-ERA.NET reporting .....	16
7.3. Change in active projects .....	17
8. Dissemination.....	17
9. Support .....	17

Annex 1: Thematic priorities for the M-ERA.NET Call 2018 .....	18
1. Topic 1: Multiscale modeling for materials engineering and processing (M3EP) .....	19
2. Topic 2: Innovative surfaces, coatings and interfaces.....	21
3. Topic 3: High performance composites .....	23
4. Topic 4: Functional materials .....	26
5. Topic 5: New strategies for advanced material-based technologies in health applications	28
6. Topic 6: Materials for additive manufacturing.....	31
Annex 2: Technology Readiness Level.....	34
Annex 3: Funding organisations participating in the M-ERA.NET Call 2018 .....	36
Annex 4: M-ERA.NET Full-Proposal Evaluation Criteria .....	45
Annex 5: Checklist for Proposers.....	47

## 1. What is M-ERA.NET

M-ERA.NET is an EU funded network which has been established in 2012 to support and increase the coordination of European research and innovation programmes and related funding in materials science and engineering. Between 2016 and 2021, the M-ERA.NET consortium will continue to contribute to the restructuring of the European Research Area (ERA) by operating a single innovative and flexible network of national and regional funding organisations. M-ERA.NET contributes to EU policies and is complementary to funding schemes at regional, national and European levels, supporting the exploitation of knowledge along the whole innovation chain from basic research to applied research and innovation (TRL 1-8). By stimulating scientific excellence and the creation of a new innovation oriented economy, M-ERA.NET will deliver lasting impact and significant breakthroughs. M-ERA.NET aims to develop a long-term cooperation between funding organisations from countries and regions across Europe and beyond.

### **What we offer:**

M-ERA.NET provides a central forum where substantial pan-European research funding programmes can be aligned to support the European RTD community. M-ERA.NET aims to address societal challenges and technological needs with an interdisciplinary approach, providing a flexible umbrella structure to cover emerging topics in materials research and innovation, including materials for low carbon energy technologies and related production technologies. As a core activity, a series of joint calls for transnational RTD projects will be implemented. These calls will offer the European RTD community an opportunity to access coordinated funding across Europe and to gain access to leading knowledge world-wide. Over five years, the M-ERA.NET consortium aims to mobilise substantial national and regional public funding as well as EU funding.

### **Why?**

Advanced materials technologies have been classified as Key Enabling Technologies (KET) with a wide range of product applications such as developing low carbon energy technologies and improving energy and resource efficiency. They have huge potential to fuel economic growth and provide jobs. In recent years, significant efforts have been made to ensure industry can meet the challenges it currently faces, in terms of the new materials being introduced and the stronger integration of products and processes required. Europe has a wealth of academic and

industrial expertise and to ensure it stays at the forefront of developments it is crucial to have a strategic programme that helps to develop projects with impact on a global scale.

## Strategic impact

M-ERA.NET is a large network and a powerful tool to tackle European and global challenges in materials research. Improving the coordination and cooperation of national and regional programmes will reduce the fragmentation of public funding across Europe and align programme strategies for transnational collaboration, eliminating programme duplication and a wasteful use of resources. M-ERA.NET will enable collaboration between leading academic and industrial research partners from European and non-European countries and regions and will facilitate access to previously inaccessible new markets. The joint calls for transnational RTD cooperation will mobilise a critical mass of public funding to support key players in materials research to intensify pan-European partnerships and to encourage newcomers to transnational RTD cooperation to realise innovative RTD projects.

## The M-ERA.NET Consortium

M-ERA.NET started in 2012 under the FP7 scheme and continues from 2016 to 2021 under the Horizon 2020 scheme as a network of more than 40 public funding organisations from around 30 different countries, including national, regional and non-European organisations. M-ERA.NET aims to identify further relevant materials research programmes and to establish cooperation with funding organisations from Europe and beyond.

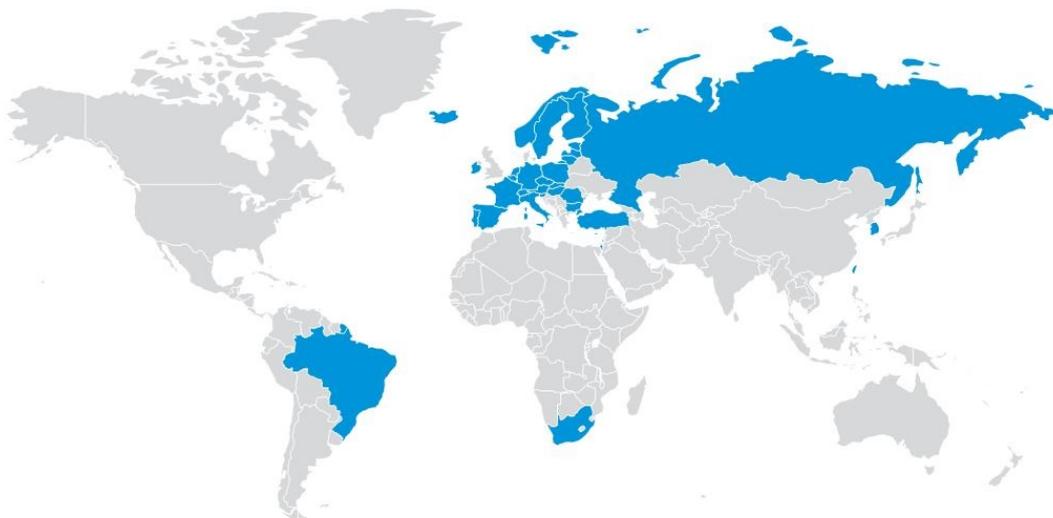


Figure 1: M-ERA.NET 2 participants, see also <https://www.era-learn.eu/network-information/networks/m-era-net-2/overview-participants>

## 2. Structure of the M-ERA.NET Call 2018

The objective of the M-ERA.NET Call 2018 is to enable transnational R&D projects between partners receiving funding from regional/national programmes.

Fig. 2 shows the schematic workflow of the Call 2018. Benefits are combined in one approach: On the one hand the regional/national funding organisations apply their own well-established funding rules and procedures known to their applicants, and on the other hand the M-ERA.NET provides transnational coordination expertise:

- The announcement and dissemination activities of the call are performed by the M-ERA.NET network.
- The eligibility of funding applications will be checked by national/regional funding organisations according to the rules defined by their respective funding programmes, targeting a reasonable balance of requested and available national/regional budgets.
- There will be a centralised evaluation performed by independent international evaluators that provide a ranking list.
- The final funding decision will be made by the national funding organisations.
- The coordination of the evaluation and funding decisions is performed by the M-ERA.NET Steering Board at the Selection Meeting.

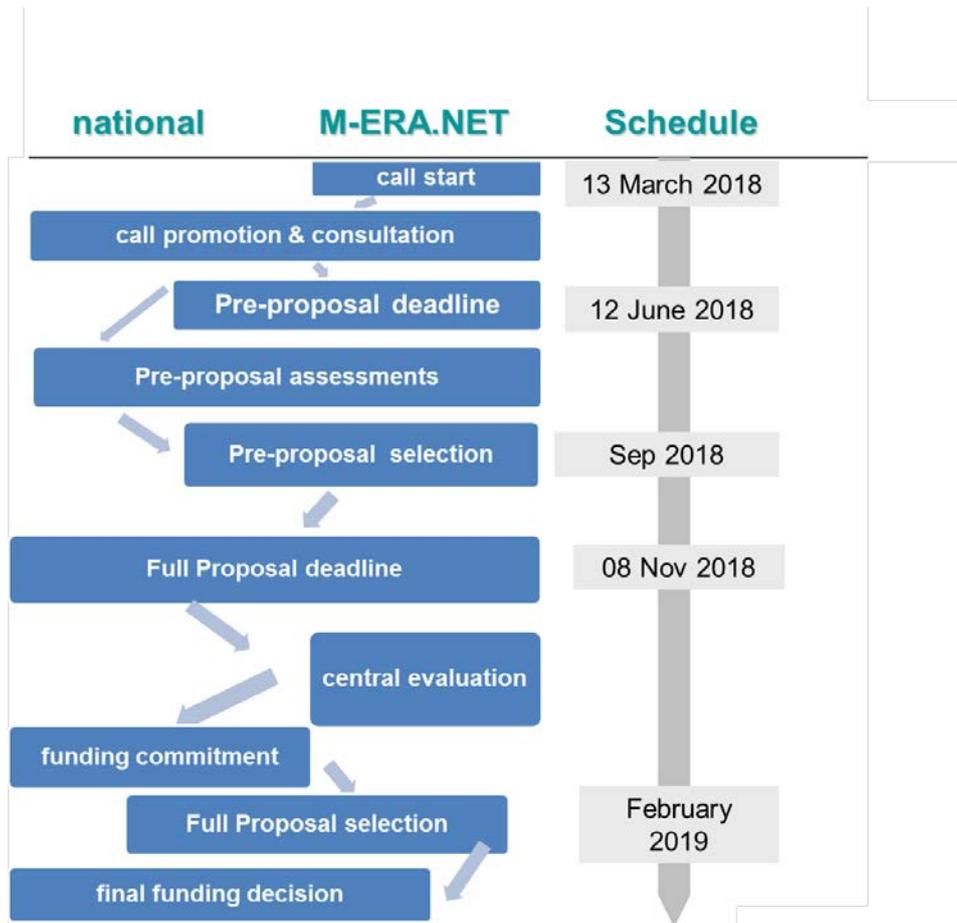


Figure 2: Workflow of the call 2018

## 3. Call Announcement

### 3.1. Objectives and Topics

The aim is to fund ambitious transnational RTD projects addressing materials research and innovation including materials for low carbon energy technologies and related production technologies.

This call supports the following topics:

Topic 1: Multiscale modeling for materials engineering and processing (M3EP)

Topic 2: Innovative surfaces, coatings and interfaces

Topic 3: High performance composites

Topic 4: Functional materials

Topic 5: New strategies for advanced material-based technologies in health applications

Topic 6: Materials for additive manufacturing

M-ERA.NET will support the research and innovation chain described through the Technology Readiness Levels (TRL). A more detailed description of the topics is available in Annex 1. A description of the TRLs can be found in Annex 2.

The individual national/regional thematic programme focus and funding rules (3.2.) must be taken into account.

### 3.2. Funding rules

Each project partner has to apply individually for regional/national funding. For each project partner the funding rules of the respective regional/national programmes apply. **This means that depending on the respective national/regional funding rules some project partners have to submit additional national/regional proposals or information on national/regional level.**

To obtain detailed information about the specific funding rules and programme priorities we strongly recommend contacting the respective national/regional funding organisations (see Annex 3 for details).

### 3.3. Eligible project structure

- Project consortia consisting of a minimum of 3 partners (all requesting funding) from at least 2 different countries (at least 1 EU member states or associated country<sup>1</sup>) participating in the M-ERA.NET Call 2018 can apply. Partners not asking for funding can participate in addition to the minimum consortium of 3 partners from 2 different countries. The consortia may involve as many partners as necessary.
- Coordinator belongs to a country/region participating in the M-ERA.NET Call 2018.
- Proposal addresses appropriate TRLs for selected M-ERA.NET Call 2018 topics
- Proposal is recommended for Full-Proposal submission by M-ERA.NET after Pre-Proposal stage.
- SMEs, large companies, academic research groups, universities, public research organisations or other research organisations may also participate according to their national/regional financing regulations.

Small to medium sized **projects** (4 or 5 partners on average per consortium) are expected. The roles of each partner within the consortium should clearly add value to the objectives of the proposed project. Depending on the nature of the project each partner in the consortium must demonstrate how it will exploit the expected results.

National/regional funding rules apply. Therefore in some cases only certain topics, TRLs or types of organisations are eligible (e.g. some national/regional programmes fund only industrial but no academic partners, low/high TRLs). It is highly recommended to contact the respective national/regional funding organisation before proposal submission (see Annex 3 for details).

A consortium agreement between the project partners is recommended for funded projects based on national/regional funding rules. However, the principles of the agreement should already be clear when submitting the proposal. The purpose of the consortium agreement is to clarify:

- the responsibilities of the partners;
- decision processes inside the project;
- management of any change of partners;

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<sup>1</sup> [http://ec.europa.eu/research/participants/data/ref/h2020/grants\\_manual/hi/3cp/h2020-hi-list-ac\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/3cp/h2020-hi-list-ac_en.pdf)

- how to exploit and/or commercialise the results (for each partner);
- IPR issues.

A template for the consortium agreement can be found at: [www.iprhelpdesk.eu](http://www.iprhelpdesk.eu)

### 3.4. Project budget

No overall limits have been defined on M-ERA.NET level but national/regional limits regarding the available funding will apply.

### 3.5. Project duration

The maximum project duration cannot exceed 36 months. National/regional limits regarding the duration of projects will apply.

### 3.6. Dates and deadlines

Date	Step	Place
13 March 2018	Launch of the Call 2018	
12 June 2018 12:00 noon Brussels time	Deadline for submission of: a) Pre-Proposals and b) National/regional Funding Applications, if necessary*	a) Online (via IT tool) b) National/Regional funding organisations
Mid-September 2018	Feedback to applicants	
8 November 2018 12:00 noon Brussels time	Deadline for submission of: a) Full-Proposals and b) National/regional Funding Applications, if necessary*	a) Online (via IT tool) b) National/Regional funding organisation
February 2019	M-ERA.NET feedback to applicants	
March 2019	Contract negotiations for selected proposals on national/regional level	National/Regional funding organisations
Spring 2019	Start of funded projects	

\* *contact your national/regional funding organisation*

## 4. Application process

The M-ERA.NET application process will be a 2-step procedure: Pre-Proposal and Full-Proposal.

1. Before submitting a proposal, all project partners must contact their respective national/regional programme funding organisations in order to discuss the project line-up and the funding conditions.
2. **A Pre-Proposal is mandatory.** It has to be submitted by the coordinator through an online application form available at [www.m-era.net](http://www.m-era.net). At the same time national/regional funding applications must be submitted to each of the involved funding organisation according to their specific rules (if applicable).
3. National/regional funding organisations will carry out assessments of Pre-Proposals and respective national/regional funding applications. The Pre-Proposal stage will be used to ensure that only high quality proposals which are in line with national requirements are invited to the Full-Proposal stage. Applicants will be provided with feedback after the review of their Pre-Proposal, including a recommendation to submit (or not) a Full-Proposal.
4. A proposal has to be recommended for Full-Proposal submission by M-ERA.NET after Pre-Proposal stage to be eligible.
5. A Full-Proposal (including Annex 1) must be submitted by the project coordinator through an online application form available at [www.m-era.net](http://www.m-era.net). At the same time national/regional funding applications must be submitted to each of the involved funding organisation according to their specific rules.
6. In the second stage Full-Proposals will be subject to a central evaluation performed by independent international evaluators which will result in a ranking list. At the M-ERA.NET selection meeting parties will agree on the projects that are going to be financed based on the ranking list and the available nation/regional finance resources.
7. M-ERA.NET recommends the funding of projects to the respective funding organisations. The regional/national funding organisations make the final funding decision.

## 4.1. Stage 1: M-ERA.NET Pre-Proposal

The Pre-Proposal gives an overview on the whole project. It is mandatory and has to be submitted in English by the project coordinator through an online application form available at [www.m-era.net](http://www.m-era.net). In addition to the Pre-Proposal (online submission) the corresponding national/regional funding application form may be requested by the respective funding organisation according to their respective programme rules.

After eligibility check and evaluation of Pre-Proposals M-ERA.NET gives advice to the project coordinators and recommends/does not recommend the submission of Full-Proposals.

## 4.2. Stage 2: M-ERA.NET Full-Proposal (and national/regional funding applications)

The Full-Proposal gives an overview of the whole project and describes all national project parts. To receive funding, the national parts of the project must fulfil their national/regional criteria. This will create different submission and financing situations for partners from different countries.

- ▶ *Project objectives stated in the Pre-Proposal cannot be changed.*
- ▶ *Other changes from Pre- to Full-Proposal should be avoided. In any case, changes from Pre- to Full-Proposal stage have to be coordinated with all involved funding organisations by the consortium leader! It is not possible to add new countries to the consortium, i.e. only new partners from countries already participating in the proposal can be added after the Pre-Proposal stage.*

*This means that changes regarding partners, content, costs, funding or consortium have to be communicated to all involved funding organisations. The consortium leader is responsible to coordinate and ensure the acceptance of these changes by the involved funding organisations.*

## 4.3. Confidentiality

Proposals and any information relating to them (including the names of the evaluators) will be kept confidential and only be accessible to the organisations involved in the funding. Proposals will not be used for any purpose other than the evaluation of the applications, making funding decisions and monitoring of the project. International experts are required to sign a confidentiality agreement prior to evaluating proposals.

## 5. Evaluation

M-ERA.NET aims at providing a transparent, fast and straight forward assessment of the submitted project proposals.

### 5.1. Pre-Proposal:

#### 5.1.1 Eligibility check and evaluation criteria:

At M-ERA.NET level:

- Pre-Proposal submitted on or before deadline.
- Presence of requested M-ERA.NET Pre-Proposal form in English.
  - Minimum of 3 partners (all requesting funding) from at least 2 different countries (at least 1 EU member states or associated country<sup>2</sup>) participating in the M-ERA.NET Call 2018.
  - Partners not asking for funding can participate in addition to the minimum consortium of 3 partners from 2 different countries.
- Coordinator belongs to a country/region participating in the M-ERA.NET Call 2018.
- TRLs are in line with the call topic.
- Maximum project duration of 3 years.
- Pre-Proposal is recommended for submission for a Full-Proposal by at least 2 funding organisations from the countries/regions involved.

At national/regional level:

- Presence of requested national/regional Pre-Proposal forms (if applicable).
- Minimum number of eligible, independent partners (if applicable, criteria of involved funding programmes apply).
- Relevance to funding programme (if applicable, criteria of involved funding programmes apply).
- Financial status of applicants, especially industrial applicants.

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<sup>2</sup> [http://ec.europa.eu/research/participants/data/ref/h2020/grants\\_manual/hi/3cpart/h2020-hi-list-ac\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/3cpart/h2020-hi-list-ac_en.pdf)

### 5.1.2. Result of Pre-Proposal assessment:

At national/ regional level the assessment of Pre-Proposal results in one of the recommendations, to be communicated to the applicants:

- *Recommended for submitting the Full-Proposal (including requirements and/or potential comments for improvement).*
- *Not recommended (motivated - mandatory comments).*

## 5.2. Full-Proposal:

### 5.2.1 Eligibility check:

Eligibility checks of the Full-Proposal are done before the central evaluation.

At M-ERA.NET level:

- Full Proposal submitted on or before deadline.
- Presence of requested M-ERA.NET Full-Proposal form and Annex 1 to the Full-Proposal form in English.
- Minimum of 3 partners (all requesting funding) from at least 2 different countries (at least 1 EU member states or associated country<sup>3</sup>) participating in the M-ERA.NET Call 2018.
- Partners not asking for funding can participate in addition to the minimum consortium of 3 partners from 2 different countries.
- Coordinator belongs to a country/region participating in the M-ERA.NET Call 2018.
- TRLs are in line with the call topic.
- Maximum project duration of 3 years.
- Only in exceptional cases changes from Pre-Proposal to Full-Proposal are allowed.
- Proposal is recommended for funding by at least 2 funding organisations from the countries/regions involved after the Pre-Proposal assessment.

At National/regional level:

- Recommendations given in the Pre-Proposal stage are fulfilled.

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<sup>3</sup> [http://ec.europa.eu/research/participants/data/ref/h2020/grants\\_manual/hi/3cpart/h2020-hi-list-ac\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/3cpart/h2020-hi-list-ac_en.pdf)

### 5.2.2. Result of Full-Proposal eligibility check:

At national/regional level the eligibility check of Full-Proposals results in a preliminary commitment to the Full-Proposal, depending the outcome of the central evaluation.

### 5.2.3. Evaluation of Full-Proposal:

The Full-Proposal evaluation is carried out as a central evaluation by independent experts.

The M-ERA.NET Call 2018 Evaluation Procedure:

- *Individual written assessments: 3 individual and independent written assessments including scoring for each Full-Proposal provided by selected and agreed experts.*
- *Compilation of individual assessments: 3 individual assessments are compiled by one of the 3 experts (= rapporteur). The compilation consists of peer review report and scoring. All experts who provided individual written assessments confirm the compilation and consistency of peer review report and scoring.*
- *A ranking list of recommended projects is based on the scoring.*
- *All of the involved funding organisations meet for a selection meeting to assemble and commit themselves to the final list of selected proposals (selection list). The selection is based on the M-ERA.NET ranking list and the available national/regional finance resources..*
- *If there are big differences in the Full-Proposal compared to the recommended Pre-Proposal and/or the eligibility criteria are not fulfilled the Full-Proposal may be rejected without evaluation.*
- *The names of the independent experts will be kept confidential.*

The M-ERA.NET Call 2018 Evaluation Criteria for Full-Proposal:

The Full-Proposals will be evaluated according to the following criteria:

- Excellence
- Impact
- Quality and efficiency of the implementation

Evaluation criteria, scoring and thresholds are described in Annex 4.

## 6. Decision

### 6.1. Decision process

The M-ERA.NET selection meeting results in the M-ERA.NET recommendation for funding decisions at national/regional level. The recommended selection list will be forwarded to the involved programme owners who will be in charge of the final funding decisions.

### 6.2. Funding

#### 6.2.1. Contract

Funding contracts are signed directly between the project partners and their national/regional funding organisations.

#### 6.2.2. Payments and Start of projects

Depending on the national/regional regulations, a pre-condition for transferring the first funding instalments might be the existence of a consortium agreement that also includes IPR related issues.

It is highly recommended that the project starting and finishing dates are the same for all project parties. As the national funding contracts may not all become effective at the same time, the project parties:

- Usually do not receive the instalments at the same time,
- Usually are not reviewed/monitored on national/regional level at exactly the same time however, the M-ERA.NET consortium will help to minimise these gaps.

## 7. Monitoring

### 7.1. National/regional project review

The progress of each individual contract will be monitored by the respective national/regional funding organisation through specific project review processes.

### 7.2. M-ERA.NET reporting

Apart from the national/regional project review, the transnational cooperation aspects will be monitored on M-ERA.NET level, e.g. by using online questionnaires.

### **7.3. Change in active projects**

Any substantial change in an on-going project must be reported immediately to the involved funding organisations. The project partners should be aware that changes may affect their funding.

## **8. Dissemination**

A reference to M-ERA.NET is requested in publications, exhibitions, lectures and press information concerning results of the projects.

## **9. Support**

Frequently Asked Questions (FAQ) are listed in the website ([www.m-era.net](http://www.m-era.net)). In addition, all Funding Organisations participating in the call will provide assistance to project proposers in the case of any questions.

## Annex 1: Thematic priorities for the M-ERA.NET Call 2018

- Topic 1: Multiscale modeling for materials engineering and processing (M3EP)
- Topic 2: Innovative surfaces, coatings and interfaces
- Topic 3: High performance composites
- Topic 4: Functional materials
- Topic 5: New strategies for advanced material-based technologies in health applications
- Topic 6: Materials for additive manufacturing

## 1. Topic 1: Multiscale modeling for materials engineering and processing (M3EP)

### Technical content/scope

Current developments in combinatorial synthesis and multi-scale modeling together with high throughput or multi-scale experimentation allow for a faster development of materials targeted to both enhanced performance and processing. In addition, novel multiscale modeling and data driven strategies should be developed to expand the applicability of Integrated Computational Materials Engineering (ICME). This will lead to significant improvements to design new materials, to assess materials performance and to improve processing strategies. Projects within this topic could be basic or applied research (TRL target for project deliverables within levels 2-5).

The proposals should focus on either of the following model-driven schemes:

- Design of new materials with properties targeted for engineering applications;
- b) Tailoring microstructural changes of known materials to obtain new or improved properties;
- c) Creating or improving tools to advance virtual design, virtual testing or virtual manufacturing;
- d) Development of new multiscale modeling strategies to address challenges in the processing-structure-properties paradigm.

For a) and b) quantitative estimates of the target properties shall be estimated.

### Objectives

The proposals shall address one or several of the following items:

- Material constitutive modeling: Use of materials physics-based design principles in a computational environment, bridging the gap between different time and/or length scales.
- Data-driven modeling methods, model reduction and uncertainty quantification.
- Development of new models and modeling strategies applicable to high performance composites, multifunctional materials, biomaterials and coatings.
- Development of new models and modeling strategies for additive manufacturing.
- Experimental validation of model results across multiple length scales.

The proposals shall clearly present the approach taken for relating the above items.

### Expected impact

The proposal shall address how it will contribute to the expected impact of the topic, defined as follows:

- Improved predictive power of Multiscale Modeling for Materials Engineering and Processing;
- Building and strengthening a common European research community in the area of Multiscale Modeling for Materials Engineering and Processing;
- Increased competitiveness of the European industry, allowing cost saving in materials design and processing, as well as a shortened time-to-market for materials with advanced properties;
- Better predictive modeling of material behaviour and processing through novel data-driven approaches.

All proposals should address any environmental, social or ethical impacts where relevant. All proposals should clearly state the Technology Readiness Level (TRL) at the project start and at the project end (see Annex 2). In order to increase the potential for new business opportunities and commercial exploitation of the results, proposals aiming at TRL 4 and below should include a plan for the transition to higher TRLs at a later stage (i.e. beyond the project end date) and demonstrate industrial involvement, for example by establishing an industrial advisory board or by the participation of one or more companies in the project consortium. For proposals aiming above TRL 4, industrial partners should be involved in the project consortium.

### **Target groups**

This topic is targeted at all groups in the innovation chain: basic research, applied research, industrial R&D. The topic is particularly suitable for collaboration with other topics in this call and for the establishment of a strong collaboration between research entities, SMEs and large industry.

### **Keywords**

multiscale materials modeling, ICME, materials genome, constitutive modeling, computational simulation, computational materials science, processing-structure-properties relationships, multiphysics, experimental validation, multiple length scales, manufacturing processes, new materials.

**Indicative targeted TRL: 2-5**

## 2. Topic 2: Innovative surfaces, coatings and interfaces

### Technical content/scope

Surface and coating technology is a key enabler for new solutions in numerous industrial sectors in Europe. This call will stimulate application driven development of innovative surfaces, multifunctional coatings, interfaces, and related process technologies.

In particular, energy-related surface and coating properties are encouraged to be addressed.

The proposals should consider the processing aspect of the new technology aiming for flexible and energy-efficient approaches in production with smart use of materials (saving resources and tailoring applications) in an environmentally friendly manner.

### Objectives

The proposals shall address at least one of the following items:

- Development of multifunctional coatings, innovative surfaces or interfaces.
- Development or improvement of process technologies to enable deposition of new coatings and/or surface modification.

Project proposals should:

- Address innovative surface modification and coating solutions, consider innovative processing routes or new concepts for coating and surface treatment.
- Consider aspects such as: basic understanding of the mechanisms, experimental assessment, prototyping, up-scaling, manufacturing and validation with a view to final customer applications.

Where beneficial, the proposal should address use of advanced characterisation and/or modeling techniques.

In order to ensure relevance for different partners in the value chain, the proposal should state clear concepts for application(s) and targeted industrial sector(s).

### Expected impact

The proposals shall address how they will contribute to the expected impact of the topic, defined as follows:

- Development of innovative components/products with tailored properties or functionalities by tuned surfaces and coatings and/or related process technologies;
- Achieving a positive ecological and energy impact in terms of avoidance of hazardous materials and compounds by developing processes, coating materials, technology and product life cycles following a circular economy strategy;

- The proposals should aim at the development of innovative products or technologies based on functionalised surfaces and coatings that might have strong societal impact, on e.g. safety, economics, employment and life quality, and it is specifically encouraged that consortia should result in synergies between industry and academia.

All proposals should address any environmental, social or ethical impacts where relevant. All proposals should clearly state the Technology Readiness Level (TRL) at the project start and at the project end (see Annex 2). In order to increase the potential for new business opportunities and commercial exploitation of the results, proposals aiming at TRL 4 and below should include a plan for the transition to higher TRLs at a later stage (i.e. beyond the project end date) and demonstrate industrial involvement, for example by establishing an industrial advisory board or by the participation of one or more companies in the project consortium. For proposals aiming above TRL 4, industrial partners should be involved in the project consortium.

### **Target groups**

This topic is targeted at all groups in the innovation chain: basic research, applied research and industrial R&D. The topic is particularly suitable for the establishment of a strong collaboration between research entities and SMEs. Participation of large industry is encouraged e.g. as potential end user of the technology proposed.

Interdisciplinary projects are encouraged and should enable a broader cross-sectorial use.

### **Keywords**

functionalised surfaces, multifunctional coatings, innovative surfaces and coating materials, advanced coating and surface technologies, structured surfaces, (nano)composite coatings and multilayers, self-responsive coatings, surfaces with sensor capabilities.

**Indicative targeted TRL: 2-6**

### 3. Topic 3: High performance composites

#### Technical content/scope

Within the scope of this call, composites are defined as engineered materials, and coatings, including hybrids, composed of two or more constituents, for example, a polymer or metallic matrix reinforced by a fibre, particle, container or a filler that meets the requirements which cannot be otherwise fulfilled by one component alone. The matrix, fibres, particles and fillers can be synthetic or bio-based. Fibres, particles, containers, and fillers can be on the nanoscale.

#### Objectives

This call topic is aimed at high performance composites having functional properties that meet the target applications in transportation, construction, packaging and medical devices as well as other engineering applications with a particular emphasis on energy (consumption reduction, storage and production). Proposals are expected to fall into the current research categories listed above.

Regarding the properties of materials, the new developed composites should combine at least two of the following properties:

- High strength and stiffness to weight-ratio.
- High performance composites with intrinsic recycling properties.
- Recycling of waste materials to develop high performance composites.
- Durability (e.g. good resistance to creep, fatigue, humidity, etc.)
- Tailored thermal or electrical properties.
- Self-healing properties.
- Biocompatible or anti-microbial properties.
- Biodegradable and compostable properties.
- Fire retardant properties with environmentally friendly substances.
- High performance composites suitable for multiple processing techniques including additive manufacturing.

In addition to the properties of materials the research proposals could also address the following material design and manufacturing issues (descriptive of process):

- Novel and unique knowledge in molecular design, functionalization and characterization of a wide range of fibre or filler (nano or micro) reinforced composite materials for composites with improved reinforcement/matrix interaction.
- Composite coatings.
- Development of new bio-based resins and/or bio-based fibres or fillers.
- Methodology and tools for design-optimisation.
- Scalable and rapid manufacturing, for example material innovations could encompass fast curing, low viscosity resins, stampable thermoplastic composite sheets.

- Automation and robotisation.
- Modeling and simulation of processing including multi-scale approaches or the use of data mining and machine learning (Artificial Intelligence).
- Joining, assembly and repair including solutions joining other materials.
- Structural health monitoring.
- Composite end-of-life technologies.
- Retaining economic value and energy of materials as long as possible to promote the circular economy.

To strengthen the whole innovation chain it is strongly recommended that the project proposal covers materials, processing and application development of composites. Such integration could be further enhanced by fostering collaboration between universities and industry, and by a consortium covering the whole value chain.

### **Expected impact**

The proposals shall address how they will contribute to the expected impact of the topic, defined as follows:

- More competitive industrial products and processes using the advanced materials design and manufacturing concepts;
- Socio-ecological benefits provided by products with higher integration level of functionality, lighter products to transport, lighter dynamic applications to decrease energy consumption, and by using materials that will result in a lower environmental impact;
- Because the composites industry is characterised by a large number of scattered players, including SME manufacturers and equipment suppliers, the projects should result in networks inside Europe, thereby improving the sharing of knowledge and reinforcing both technological and scientific platforms.

All proposals should address any environmental, social or ethical impacts where relevant. All proposals should clearly state and motivate at what level on the Technology Readiness Level (TRL) scale the project is situated at the beginning and after the project is finished (see Annex 2). In order to increase the potential for new business opportunities and commercial exploitation of the results, proposals aiming at TRL 4 and below should include a plan for the transition to higher TRLs at a later stage (i.e. beyond the project end date) and demonstrate industrial involvement. This can be done by establishing an industrial advisory board (or alternatively by the participation of one or more companies in the project consortium when feasible). For proposals aiming above TRL 4, industrial partners should be involved in the project consortium.

### Target groups

This topic is targeted at all groups in the innovation chain: basic research, applied research, industrial R&D. The particular subject of the proposal deals with the establishment of a strong collaboration between research entities, SMEs and large industry.

### Keywords

biobased composites, synthetic composites, hybrid material systems, polymer matrix, metal matrix, functional properties, in-service behaviour, design methodology, process technology, process modeling, artificial intelligence, recycling, material behaviour modeling, circular economy.

Indicative targeted TRL: 2-6

## 4. Topic 4: Functional materials

### Technical content/scope

Advanced functional materials are an important economic and employment generator in Europe. Functional materials are the bottleneck for almost all technologies. Design and simulation of materials and microstructures with tailored properties and appropriate process technologies are needed to achieve high performance in industrial applications. European product innovation relies strongly on more efficient technologies with new physical properties and performance. Improved materials are expected to contribute to reduce our dependence on oil, gas and coal. There is increasing concern regarding the replacement of critical raw materials, toxic materials, recycling and long term stability. The European Strategic Energy Technology Plan (SET Plan) recognizes this situation and emphasises cost-competitive low carbon energy and energy efficiency technologies. The SET Plan Materials Road Map reinforces the pivotal enabling role of advanced materials and clearly outlines the medium to long term strategy for the coming years.

### Objectives

Proposals within the scope of this topic should aim at the development of advanced functional materials or materials systems in at least one of the following areas:

- Materials for sensing and actuation, and ICT: smart materials/metamaterials with controlled electrical, magnetic, thermal, optical, and mechanical properties, where possible enabling low power or autonomous device/systems.
- Smart building environments: thermal insulation materials, advanced window concepts, active paints, advanced illumination concepts, efficient heat radiation solutions, etc.
- Electrochemical energy conversion and storage: new materials for use in rechargeable ion batteries, alternatives to graphite electrodes, new nanomaterials for supercapacitors, ionic and electronic conductors for new electrochemical storage and energy conversion concepts. Solid state batteries and capacitors. New catalysts for fuel cells and hydrogen generation.
- Energy harvesting materials and solutions: new energy harvesting solutions based on advanced thermoelectric, caloric, piezoelectric, chemical concepts, others. New designs and architectures for increased energy efficiency.
- Photovoltaics: improved architectures for thin film solar cells, including absorbers, micro concentrators, passivation layers, controlled composition gradients, others. Novel solar cell materials (nano-based concepts, others).

### Expected impact

The proposals shall address how they will contribute to the expected impact of the topic, defined as follows:

- Ensure the future European energy supply through technological development based on novel multifunctional materials;

- Support the European strategic policy targets in terms of greenhouse gas emission reduction and developing affordable sustainable energy sources and usage;
- Improved competitiveness and strengthened industrial leadership;
- Strengthened innovation excellence of the European academia and research institutes.

All proposals should address any environmental, social or ethical impacts where relevant. All proposals should clearly state the Technology Readiness Level (TRL) at the project start and at the project end (see Annex 2). In order to increase the potential for new business opportunities and commercial exploitation of the results, proposals aiming at TRL 4 and below should include a plan for the transition to higher TRLs at a later stage (i.e. beyond the project end date) and demonstrate industrial involvement, for example by establishing an industrial advisory board or by the participation of one or more companies in the project consortium. For proposals aiming above TRL 4, industrial partners should be involved in the project consortium.

### **Target groups**

This topic is targeted at all groups in the innovation chain: basic research, applied research, industrial R&D.

### **Keywords**

advanced functional or multifunctional materials, electrical properties, magnetic properties, optical properties, chemical properties, thermal properties, mechanical properties, nano/microstructured materials, advanced processing technologies, sensors, ICT, photovoltaics, energy harvesting, energy conversion and storage.

**Indicative targeted TRL: 2-5**

## 5. Topic 5: New strategies for advanced material-based technologies in health applications

### Technical content/scope

Wellness and healthy ageing of the European population require new or improved solutions to health-related issues. Many of these solutions will come from the development of new advanced materials as key components of therapeutics (e.g. drug delivery systems, implants, tissue regeneration strategies, cell and gene therapies, etc.), diagnostics (e.g. contrast agents, implantable devices) and theranostics. These materials will be in contact with the human body at different levels.

The purpose of this call topic is to provide opportunities to advance material-based technologies towards the market. This action is aligned with societal challenges regarding “Health, Demographic Change and Wellbeing” as defined in the H2020 framework. It is also in agreement with the recognition of advanced materials as a Key Enabling Technology for strengthening the competitiveness of the European industry.

### Objectives

The main objective is to obtain a better understanding of the functionality of biomaterials and interactions with their biological hosts (e.g. organs, body tissues, cells and human bio-fluids). Materials investigated should target at least one clinically relevant application.

Proposals must address one or more of the following:

- Understanding interactions between biomaterials and biological hosts with specific focus on hierarchical structures and/or multiple time scales.
- Aspects such as biofilm formation and biodegradation.
- The crossing of biological barriers such as blood brain barrier, digestive system, skin barrier or cell membranes.
- Understanding of the impact of the sterilisation process on biomaterials.
- Use of renewable sources in synthesis of biodegradable materials.
- Application of green chemistry to comply with REACH<sup>4</sup> regulation for eventual manufacturing process.

Proposals are expected to take into account the following:

- The potential market and exploitation routes including scalability.

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<sup>4</sup> <https://echa.europa.eu/regulations/reach/legislation>

- Relevant regulatory issues<sup>5</sup>.
- Where appropriate the in vitro testing and/or assays in small animals must be conducted following the national ethical rules of each relevant partner involved.

Moreover, the proposals are strongly encouraged to consider the following issue:

- Cross-collaboration between materials scientists, biologists, medical doctors and industrial partners.

### Expected impact

The proposals shall address how they will contribute to the expected impact of the topic, defined as follows:

- Understanding the complexity of biomaterials' interfaces at hierarchical structures and/or multiple time scales going far beyond the current state of the art;
- Achievement of new or improved materials performance for health applications;
- Higher competitiveness of the European health industry through more reliable products and sustainable processes;
- Improved market access through increased awareness of the regulatory protocols;
- Increased collaborations between materials science RTD performers, industrial and medical stakeholders in the health sector;
- At the end of the project the technology being addressed is expected to reach TRL 4 (see Annex 2).
- 

All proposals should address any environmental, social or ethical impacts where relevant. All proposals should clearly state the Technology Readiness Level (TRL) at the project start and at the project end (see Annex 2). In order to increase the potential for new business opportunities and commercial exploitation of the results, proposals aiming at TRL 4 and below should include a plan for the transition to higher TRLs at a later stage (i.e. beyond the project end date) and demonstrate industrial involvement, for example by establishing an industrial advisory board or by the participation of one or more companies in the project consortium. For proposals aiming above TRL 4, industrial partners should be involved in the project consortium.

### Target groups

This topic is targeted at all groups in the innovation chain: basic research, applied research, industrial RTD. Collaboration between research entities, SMEs and large industry is encouraged.

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<sup>5</sup> <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017R0745>

**Keywords:** biomaterials, bio-interfaces, biofilms, biodegradation, nanotechnology, implants, scaffolds, sterilisation, additive manufacturing, therapeutics, diagnostics, theranostics, natural compounds, green chemistry.

**Indicative targeted TRL:** 2-5

## 6. Topic 6: Materials for additive manufacturing

### Technical content/scope

Additive Manufacturing (AM) is a process of directly building 3D parts and components based on a digital model usually by adding material layer by layer. AM is a rapidly developing industrial sector and, potentially, a disruptive technology. This is because, in principle, it is material and energy effective and sustainable compared to subtractive technologies. However, the full exploitation of 3D AM processes is currently limited due to the in-process and in-service performance of the available materials' sets. Within this call topic, proposals should focus on the development of materials specifically for use in AM processes and leading to required performance, reliability and economics of manufactured components.

### Objectives

The objective is to develop innovative metallic, ceramic, polymeric and composite materials designed for use in AM processes (e.g. tuning composition, structure, morphology, powder-processing parameters, etc.) and advanced production systems in order to confer improved or modified properties for manufactured products. The final goal of proposed projects should be to demonstrate the ability of new materials and processes to achieve finished components exhibiting improved performance, preferably with reduced life cycle costs.

Project proposals should address materials and production processes for final part production. This could include e.g. modeling of materials and processes, mechanical and corrosion properties, surface finishing, internal stress reduction, electrical and thermal conductivity, and materials specifically designed to exploit the potential of AM systems including the ability to effectively produce multimaterial structures. Proposals should also discuss energy and environmental related aspects of the research.

Proposals falling under the scope of this topic could address (but are not restricted to) the following areas:

- Development of materials and processes designed to overcome problems relating to mechanical performance and reliability of AM parts.
- Development of materials for the AM production of components for use in non-standard environments/extreme environments.
- Biomaterials for use in the production of personalized implant devices and improved scaffolds used in tissue regeneration.
- AM processing of materials used in applications with restrictive validation / certification processes, e.g. medical applications

- Development of materials and processes for improved sustainability: reducing the use of hazardous or scarce substances, promoting re-use, recycling and biodegradability of materials.
- Development of novel materials and processes to enable innovative applications for AM parts, which could include multifunctional, functionally graded, hierarchically structured, (nano-)composite materials or organic electronics.
- New materials for energy efficiency AM applications, such as heat exchangers with complex geometry or lightweight structures.

### Expected impact

The proposals shall address how it will contribute to the expected impact of the topic, defined as follows:

- Development of materials for the production of reliable AM parts/components suitable for specific application classes;
- New feedstocks (e.g. powder, wire, filament) specifically developed to enhance functionality, reliability and performance;
- New process technology for the production of AM parts with novel materials and material combinations, including hybrid processes directly combining AM with other manufacturing processes;
- New process technology adapted to the production of new AM-specific feedstock materials.

All proposals should address any environmental, social or ethical impacts where relevant. Projects within this call topic could be basic or applied research (TRL target for project within levels 3-7).

All proposals should clearly state the Technology Readiness Level (TRL) at the project start and at the project end (see Annex 2). In order to increase the potential for new business opportunities and commercial exploitation of the results, proposals aiming at TRL 4 and below should include a plan for the transition to higher TRLs at a later stage (i.e. beyond the project end date) and demonstrate industrial involvement, for example by establishing an industrial advisory board or by the participation of one or more companies in the project consortium. For proposals aiming above TRL 4, industrial partners should be involved in the project consortium.

The use of living biological materials as part of the AM process is not covered by this call topic.

### Target groups

This topic is targeted at all groups in the innovation chain: basic research, applied research, industrial R&D&I. Collaboration between research entities, SMEs and large industry is encouraged as is participation in project consortia by international organisations.

## Keywords

additive manufacturing, mechanical performance, production, polymers, metals, ceramics, composites, feedstock, biomaterials, life cycle costs, materials efficiency, energy efficiency, recycling, modeling.

Indicative targeted TRL: 3-7

## Annex 2: Technology Readiness Level

All proposals should clearly state and motivate at what level on the Technology Readiness Level (TRL) scale the project is situated at the beginning and after the project is finished. In order to increase the potential for new business opportunities and commercial exploitation of the results:

- Proposals aiming at TRL below 4 should include a plan for the transition to higher TRL's at a later stage (i.e. beyond the project end date) and demonstrate industrial involvement. This can be realised by establishing an industrial advisory board (or alternatively by the participation of one or more companies in the project consortium when feasible).
- For proposals aiming at TRL above 4, industrial partners should be involved in the project consortium.

Where the topic description refers to the concept of "Technology Readiness Level" (TRL), the following definition in accordance with H2020<sup>6</sup> applies:

TRL 1 - basic principles observed

TRL 2 - technology concept formulated

TRL 3 - experimental proof of concept

TRL 4 - technology validated in lab

TRL 5- technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)

TRL 6 - technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)

TRL 7 - system prototype demonstration in operational environment

TRL 8 - system complete and qualified

TRL 9 - actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

In the project proposal, it should be indicated what is the TRL position in the beginning of the project and after the project is finished.

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<sup>6</sup> See p. 27 [http://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2018-2020/annexes/h2020-wp1820-annex-ga\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2018-2020/annexes/h2020-wp1820-annex-ga_en.pdf)

Topic	TRL 1	TRL 2	TRL 3	TRL 4	TRL 5	TRL 6	TRL 7	TRL 8	TRL 9
Topic 1: Multiscale modeling for materials engineering and processing (M3EP)									
Topic 2: Innovative surfaces, coatings and interfaces									
Topic 3: High performance composites									
Topic 4: Functional materials									
Topic 5: New strategies for advanced material-based technologies in health applications									
Topic 6: Materials for additive manufacturing									

### Annex 3: Funding organisations participating in the M-ERA.NET Call 2018

Country	National / regional coverage	Funding organisation	Contact person:
Austria	national	Austrian Research Promotion Agency (FFG)	Name: Fabienne Eder Phone: +43 57755 5081 e-mail: fabienne.eder@ffg.at
Belgium	regional: Flanders	Flanders Innovation and Entrepreneurship (VLAIO)	Name: Paul Schreurs Phone: +32 2 432 42 85 e-mail: paul.schreurs@vlaio.be
			Name: Johan Michiels Phone: +32 2 432 43 06 e-mail: johan.michiels@vlaio.be
	regional: French-Speaking Community	Fonds de la Recherche Scientifique (FNRS)	Name: Florence Quist Phone: +32 2 504 93 51 e-mail: Florence.Quist@frs-fnrs.be
Name: Joël Groeneveld Phone: +32 2 504 92 70 e-mail: joel.groeneveld@frs-fnrs.be			
	regional: Wallonia	Service public de Wallonie (SPW)	Name: Pierre Demoitie Phone: +32 81 33 45 40 e-mail: pierre.demoitie@spw.wallonie.be
Bulgaria	national	Bulgarian National Science Fund (BNSF)	Name: Milena Alexandrova Phone: +359 228202989 e-mail: aleksandrova@mon.bg.

Country	National / regional coverage	Funding organisation	Contact person:
Brazil	regional: Sao Paulo	Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP)	Name: Virginia Sanches Subiñas Phone: + 55 11 3838 4000 e-mail: VSubinas@fapesp.br
Czech Republic	national	Technology Agency of the Czech Republic (TA CR)	Name: Iveta Zápářková Phone: +420 234 611 511 e-mail: iveta.zaparkova@tacr.cz
Estonia	national	Eesti Teadusagentuur (ETAg)	Name: Dr. Aare Ignat Phone: +372 7317364 e-mail: aare.ignat@etag.ee
Germany	national	Projektträger Jülich (PTJ)	Name: Eva Brockhaus Phone: +49 2461 61 96320 e-mail: e.brockhaus@fz-juelich.de
			Name: Moritz Warnecke Phone: +49 2461 61 2458 e-mail: m.warnecke@fz-juelich.de
	national	Projektträger Karlsruhe (PTKA)	Name: Stefan Scherr Phone +49 721 608 25286 e-mail: stefan.scherr@kit.edu
Hungary	national	National Office for Research, Development, and Innovation (NKFIH)	Name: Elod Nemerkenyi Phone: +36-1-896-3987 e-mail: elod.nemerkenyi@nkfi.gov.hu
Italy	regional: Calabria	Regione Calabria	Name: Menotti Lucchetta Phone:+39-0961-856039 e-mail: m.lucchetta@regione.calabria.it

Country	National / regional coverage	Funding organisation	Contact person:
			Name: Rosalba Maida Phone: +39-0961-852073 e-mail: rosalba.maida@regione.calabria.it
Latvia	national	State Education Development Agency (VIAA)	Name: Maija Bundule Phone: +371 67785423 e-mail: maija.bundule@viaa.gov.lv
Lithuania	national	Research Council of Lithuania (RCL)	Name: Saulius Marcinkonis Phone: +370 676 17256 e-mail: saulius.marcinkonis@lmt.lt
Luxembourg	national	National Research Fund (FNR)	Name: Christiane Kaell Phone: +352 261925-34 e-mail: christiane.kaell@fnr.lu
Norway	national	Research Council of Norway (RCN)	Name: Lenka Hannevold Phone: +47 22 03 72 28 ; +47 98 23 04 53 e-mail: lha@rcn.no
Poland	national	National Research Programme - Advanced material technologies (NCBR)	Name: Maciej Jędrzejek Phone: +48 22 39 07 160 e-mail: maciej.jedrzejek@ncbr.gov.pl
	national	National Science Centre (NCN)	Name: Weronika Bieniasz Phone: +48 12 341 9156 e-mail: weronika.bieniasz@ncn.gov.pl
			Name: Anna Kotarba Phone: +48 12 341 9091 e-mail: anna.kotarba@ncn.gov.pl

Country	National / regional coverage	Funding organisation	Contact person:
Portugal	regional: Azores	Fundo Regional para a Ciência e Tecnologia (FRCT)	Name: Gisela Nascimento Phone: +351 296 308 948 e-mail: Gisela.MC.Nascimento@azores.gov.pt
Romania	national	Unitatea Executiva pentru Finantarea Invatamantului Superior, a Cercetarii, Dezvoltarii si Inovarii (UEFISCDI)	Name: Domnica Cotet Phone: +4021 30 23 880 e-mail: domnica.cotet@uefiscdi.ro
			Name: Cristina Cotet Phone: +4021 30 23 884 e-mail: cristina.cotet@uefiscdi.ro
Russian Federation	national	Foundation for Assistance to Small Innovative Enterprises (FASIE )	Name: Olga Levchenko Phone: +7 (495) 231-3851 e-mail: levchenko@fasie.ru
Slovakia	national	Slovak Academy of Sciences (SAS )	Name: Jan Barancik Phone: +421 2 577510 137 e-mail: barancik@up.upsav.sk
Slovenia	national	Ministrstvo za izobrazevanje, znanost in sport (MIZS)	Name: Doroteja Zlobec Phone: +386 (0)1 478 4624 e-mail: doroteja.zlobec@gov.si
South Africa	national	Department of Science and Technology (DST )	Name: Toto Matshediso Phone: +27 12 843 6339 e-mail: toto.matshediso@dst.gov.za
Spain	national	Ministry of Economy, Industry and Competitiveness - through the State Research Agency (MINECO AEI)	Name: Severino Falcón Phone: +34 916037269 e-mail: era-mat@aei.gob.es

Country	National / regional coverage	Funding organisation	Contact person:
			Name: Leonor Gómez Phone: +34 916037269 e-mail: era-mat@aei.gob.es
	regional: Andalucía	Agencia de Innovación y Desarrollo de Andalucía (IDEA)	Name: Víctor López Mielgo Phone: +346779 055 53 e-mail: vlopez@agenciaidea.es
			Name: José Antonio Pascual Sánchez Phone: +34 955 030 758 e-mail: jpascual@agenciaidea.es
	regional: Asturias	Instituto de Desarrollo Económico del Principado de Asturias (IDEPA)	Name: Ana E. Fernández Monzón Phone: + 34. 985 98 00 20 e-mail: anae@idepa.es
	regional: Basque Country	Agencia Vasca de Innovación (Innobasque)	Name: Judith de Prado Olivenza Phone: +34 944 209 488 e-mail: jdeprado@innobasque.eus
	regional: Castilla y Leon	Instituto para la Competitividad Empresarial (ICE)	Name: Beatriz Asensio Phone: +34 983 324240 e-mail: beatriz.asensio@jcyl.es
Name: Carmen Verdejo Phone: +34 983 324189 e-mail: verrebca@jcyl.es			
Switzerland	national	State Secretariat for Education, Research and Innovation (SERI)	Name: Roland Bühler Phone: +41 31 324 71 41, e-mail: roland.buehler@sbfi.admin.ch

Country	National / regional coverage	Funding organisation	Contact person:
			Name: Alain Dietrich Phone: +41 58 46 492 87 e-mail: alain.dietrich@kti.admin.ch
Taiwan	national	Ministry of Science and Technology (MOST)	Name: Dr. Ching-Mei Tang Phone: +886- 2-2737-7557 e-mail: cmtom@most.gov.tw
			Name: Dr. Jason Chia-Seng Chang Phone: +886-2-2789-6722 e-mail: jasonc@phys.sinica.edu.tw
Turkey	national	The Scientific and Technological Research Council of Turkey (TÜBİTAK)	Name: Burcu Koç Haskılıç Phone: +90 312 468 53 2625 e-mail: burcu.haskilic@tubitak.gov.tr

**Commitment per funding organisation 2018:**

	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	
Country (region): funding organisation	Multiscale modeling for materials engineering and processing (M3EP)	Innovative surfaces, coatings and interfaces	High performance composites	Functional materials	New strategies for advanced material-based technologies in health applications	Materials for Additive Manufacturing	Indicative call budget (MEUR)
<a href="#">Austria: FFG</a>	X	X	X			X	1.0
<a href="#">Belgium (Flanders): VLAIO</a>	X	X	X	X	X	X	1.0
<a href="#">Belgium (French Speaking Community): FNRS</a>	X	X	X	X	X	X	0.2
<a href="#">Belgium (Wallonia): SPW</a>	X	X	X	X	X	X	1.0
<a href="#">Bulgaria: BNSF</a>	X	X	X	X	X	X	0.1
<a href="#">Brazil (Sao Paulo): FAPESP</a>	X	X	X	X	X	X	0.4
<a href="#">Czech Republic: TA CR</a>	X	X	X	X	X	X	1.0
<a href="#">Estonia: ETAg</a>	X	X	X	X	X	X	0.3
<a href="#">Germany: PTJ/PTKA</a>	X	X	X	X		X	4.0
<a href="#">Hungary: NKFIH</a>	X	X	X	X	X	X	0.3
<a href="#">Italy (Calabria): Regione Calabria</a>	X	X	X	X	X	X	0.5
<a href="#">Latvia: VIAA</a>	X	X	X	X	X	X	0.42

<a href="#">Lithuania: RCL</a>	X	X	X	X	X	X	0.2
<a href="#">Luxembourg: FNR</a>	X	X	X	X	X	X	0.5
<a href="#">Norway: RCN</a>	X	X	X	X			2.0
<a href="#">Poland: NCBR</a>	X	X	X	X	X	X	1.0
<a href="#">Poland: NCN</a>	X	X	X	X	X	X	0.3
<a href="#">Portugal (Azores): FCRT</a>	X	X	X	X	X	X	0.1
<a href="#">Romania: UEFISCDI</a>	X	X	X	X	X	X	1.0
<a href="#">Russia: FASIE</a>	X	X	X	X	X	X	0.5*
<a href="#">Slovakia: SAS</a>	X	X	X	X	X	X	0.2
<a href="#">Slovenia: MIZS</a>	X	X	X	X	X	X	0.63
<a href="#">South Africa: DST</a>	X	X	X	X	X	X	0.3
<a href="#">Spain: MINECO AEI</a>	X	X	X	X	X	X	0.7
<a href="#">Spain (Andalucía): IDEA</a>	X	X	X	X	X	X	1.0
<a href="#">Spain (Asturias): IDEPA</a>	X	X	X	X	X	X	0.4
<a href="#">Spain (Basque Country): Innobasque</a>	X	X	X	X	X	X	0.5
<a href="#">Spain (Castilla y León): ICE</a>	X	X	X	X	X	X	1.0
<a href="#">Switzerland: SBF1</a>	X	X	X	X	X	X	1.0

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<a href="#">Taiwan: MOST</a>	X	X	X	X	X	X	1.0
<a href="#">Turkey: TÜBİTAK</a>	X	X	X	X	X	X	2.0

\*= flexible

## Annex 4: M-ERA.NET Full-Proposal Evaluation Criteria

- **1. Excellence (max. 5.0 points)**
  - 1.1 Clarity and pertinence of the objectives (max. 1.5 points)
  - 1.2 Credibility of the proposed approach and soundness of the concept (max. 2.0 points)
  - 1.3 Extent that proposed work is ambitious, has innovation potential, and is beyond the state of the art (e.g. ground-breaking objectives, novel concepts and approaches (max. 1.5 points)
  
- **2. Impact (max. 5.0 points)**
  - 2.1 Contribution at the European or international level to the expected impacts listed in the work programme under the relevant topic (max. 2.5 points)
  - 2.2 Enhancing innovation capacity and integration of new knowledge; Strengthening the competitiveness and growth of companies by developing innovations meeting the needs of European and global markets; and, where relevant, by delivering such innovations to the markets; Any other environmental and socially important impacts (not already covered above); (max. 1.0 points)
  - 2.3 Effectiveness of the proposed measures to exploit and disseminate the project results (including management of IPR), to communicate the project, and to manage research data where relevant (max. 1.5 points)
  
- **3. Quality and efficiency of the implementation (max. 5.0 points)**
  - 3.1 Quality and effectiveness of the work plan, including extent to which the resources assigned to work packages are in line with their objectives and deliverables; Appropriateness of the management structures and procedures (max. 2.0 points)
  - 3.2 Quality and relevant experience of the individual participants (max. 1.0 points)
  - 3.3 Quality of the consortium as a whole (including complementarity, balance) (max. 1.0 points)
  - 3.4 Appropriateness of the allocation of tasks, ensuring that all participants have a valid role and allocation and justification of the resources to fulfil that role (max. 1.0 points)
  
- **Ethical issues:** Full-Proposal include H2020 „Ethical issues Table“. In case ethical issues apply (applicants mark respective issues in the table) M-ERA.NET recommends that the national/regional organisations observe these issues (e.g. post-evaluation review) for their respective funded projects.

### Additional Information

Individual assessment report: Each criterion will be scored between 0.0 and 5.0 representing the sum of the scoring of the individual sub criteria.

Sub-criteria have individual maximum scores with a resolution of 0.1 points. There are no thresholds for sub-criteria. The awarded scores for each sub-criterion have to be justified with written statements by the evaluators.

Peer review report: the rapporteur will compile a peer review report, to be accepted by all 3 evaluators. The final scoring of the main criteria will take into consideration the scores from the individual assessments. Each criterion will be scored between 0.0 and 5.0 in multiples of half (0.5) points.

The threshold for individual criteria will be 3.0; the overall threshold, applying to the sum of the individual scores will be 10.0.

In case of equal scoring of proposals the scores of the individual criteria and sub-criteria can be compared as follows for the elaboration of M-ERA.NET ranking list: compare scores of impact criterion, if still equal compare scores of excellence criterion, if still equal compare scores of implementation criterion, if still equal compare sub-criteria.

## Annex 5: Checklist for Proposers

The proposal conforms to the call guidelines.	<input type="checkbox"/>
Every project partner has been in direct contact with his/her national/regional funding agency and has checked that their collaboration and their project contributions are eligible for funding.	<input type="checkbox"/>
All project partners have checked the national/regional programme procedures and regulations. All project partners are aware of documents requested by the national/regional funding organisations.  <i><b>IMPORTANT REMINDER: All consortium partners must check if applications (at Pre-Proposal and/or Full-Proposal stage) have to be submitted also to their national/regional funding organisations.</b></i>	<input type="checkbox"/>
All partners who are not eligible for 100% funding are able to provide financial resources for their own contribution.	<input type="checkbox"/>
The consortium is aware that a duly signed and stamped consortium agreement (CA) between the project partners is recommended for funded projects based on national/regional funding rules, including agreements on intellectual property rights (IPR) and agreements on scientific publications. At the time of proposal submission it is recommended to provide the principles ruling the CA but not the CA itself.	<input type="checkbox"/>

Please go to <https://www.m-era.net/joint-call-2018> to submit the:

1. Pre-Proposal form online.

Deadline for submission: 12 June 2018, 12:00 noon Brussels time

2. Full-Proposal form + Annex 1 to the Full-Proposal form online.

Deadline for submission: 8 November 2018, 12:00 noon Brussels time

For further information on M-ERA.NET please go to: <http://www.m-era.net>