M-ERA.NET 3

General aspects of the call (Call 2022)

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18 March 2021

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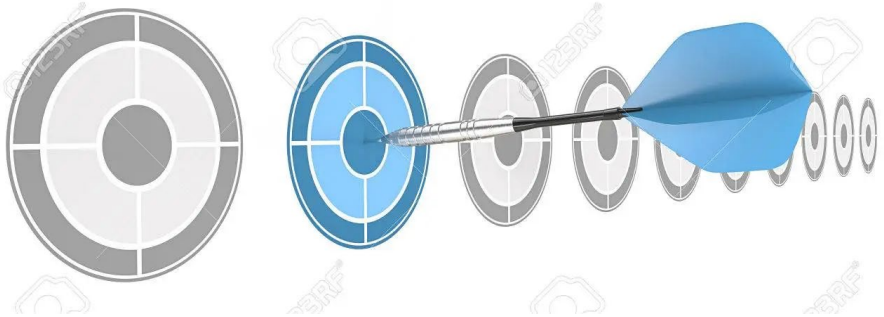
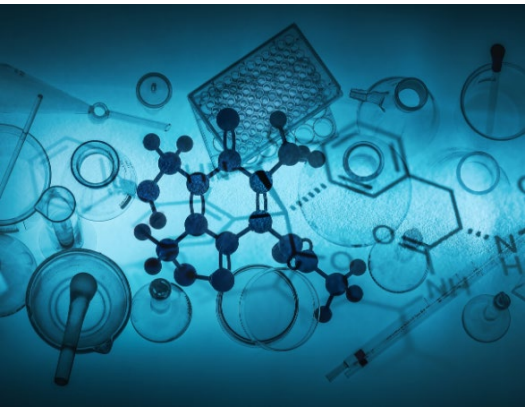
Objetivos Horizontales



[M-ERA.NET 3 Call 2022 Guide for proposers (m-era.net)](#) – p.6

- **Support the European Green Deal by increasing attention to clean energy technologies and future batteries**
- **Support the achievement of Sustainable Development Goals**
- **Socio-ecological benefits in the context of RRI**
- **Support for the Innovation chain**
- **Strengthen interdisciplinarity**

Prioridades Temáticas



*Se introducen **2 nuevas temáticas** con respecto a la convocatoria cofinanciada de 2021:*

M-ERA.NET 3 Call 2022 Guide for proposers (m-era.net) – Annexo 1

1. **Materials for energy - NUEVO**
2. **Innovative surfaces, coatings and interfaces**
3. **High performance composites**
4. **Functional materials**
5. **New strategies for advanced material-based technologies in health applications**
6. **Materials for electronics – NUEVO**

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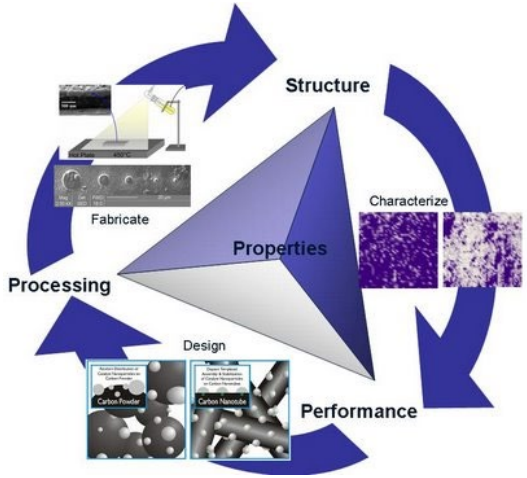
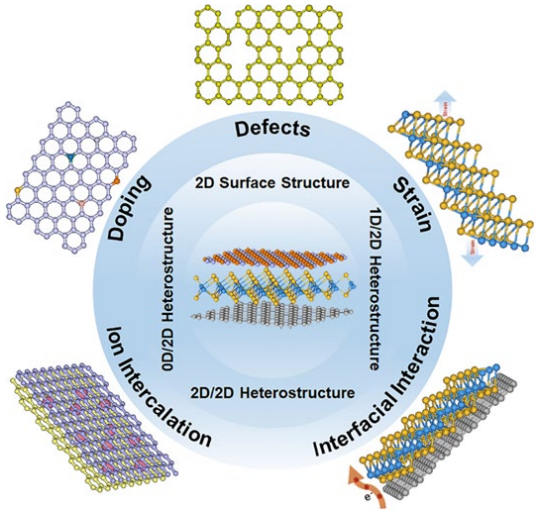
1. Materials for energy - NUEVO

OBJECTIVES AND TRANSVERSAL ASPECTS

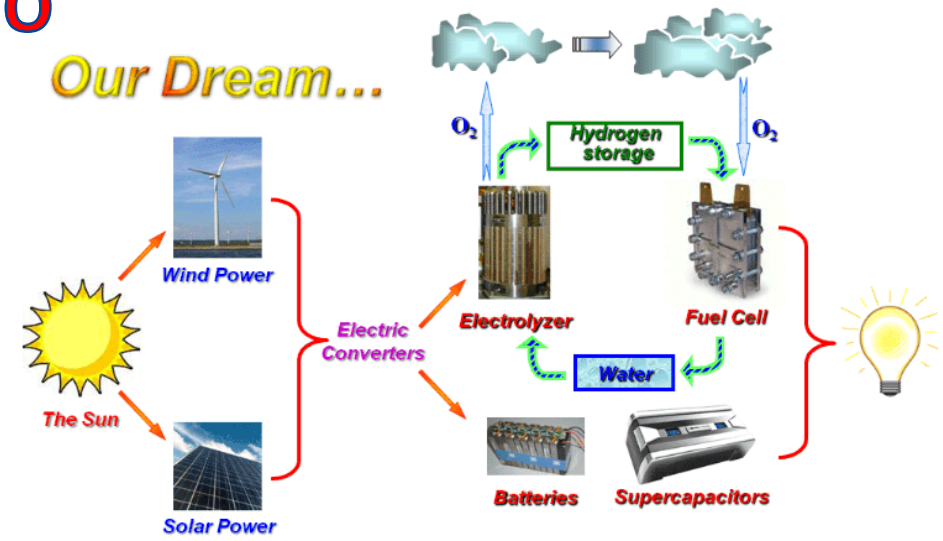
The objective of this topic is to **develop materials** to enable new and cleaner **energy production, storage, conversion and utilisation**. Proposals submitted under this topic can address any of the following items:





In addition to the topics above, the project proposal may also include **materials processing**, reduced energy consumption through light-weight materials, and/or flexible design for **repurposing and recycling**. Such integration could be further enhanced by fostering collaboration between universities and industry, to strengthen the whole innovation chain.

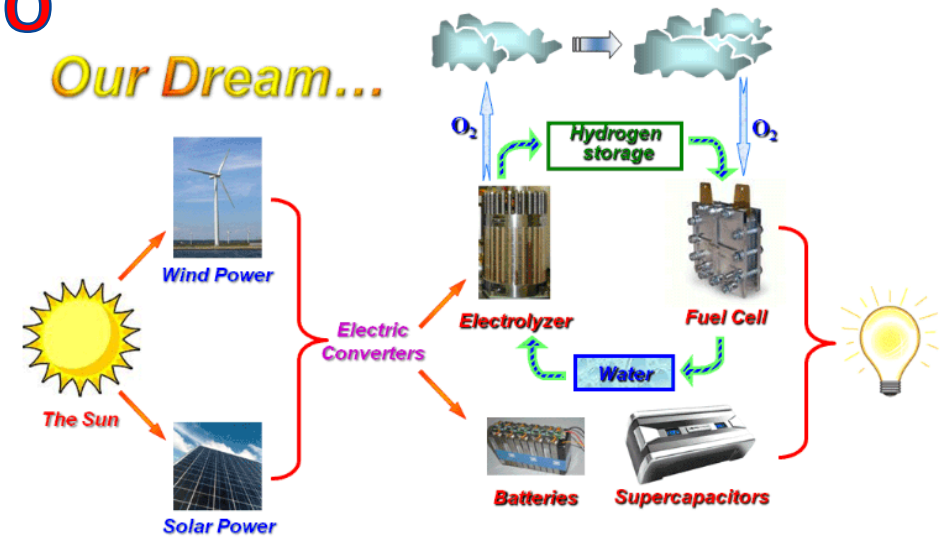
1. Materials for energy - NUEVO



OBJECTIVES AND TRANSVERSAL ASPECTS

- **Additive manufacturing** for 3D structured energy storage and conversion devices, e.g. batteries.
- **Multiscale modelling** and artificial intelligence for accelerated energy materials optimisation.
- Integrative workflows encompassing multiscale modelling and **artificial intelligence** for improved prediction of materials behaviour in energy conversion or storage devices.
- **Digitalisation** of manufacturing processes of composite materials for energy applications.
- Novel materials for *H_2 production* and storage.
- Improved active materials and electrolytes for next generation batteries for mobility (i.e. solid state Li-ion batteries and beyond Li-ion batteries) and for stationary applications (i.e. flow batteries).
- Materials ensuring **fire safety** in energy storage and conversion devices, i.e. *batteries, fuel cells and electrolysers*.
- Development of new catalysts to improve *fuel cell and electrolyser* efficiency based on computation and experiments.
- *Photovoltaics*: new concepts and architectures for solar cell materials and efficient photovoltaic cells.
- Materials operating at high temperatures in heat-to-power processes.
- Materials for short, medium and long-term thermal storage over a wide temperature range.
- Energy harvesting materials for *piezoelectric and triboelectric applications*.

1. Materials for energy - NUEVO



OBJECTIVES AND TRANSVERSAL ASPECTS

- **Additive manufacturing**
- **Multiscale modelling**
- **artificial intelligence** for

- **Digitalisation**.
- *H_2 production* and *storage*.

- *active materials* and *electrolytes* *batteries*
- **fire safety** *batteries, fuel cells and electrolysers*.
- *fuel cell and electrolyser* .
- *Photovoltaics*:

-
- *piezoelectric and triboelectric applications*.

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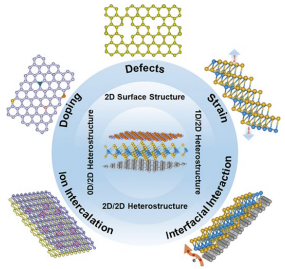
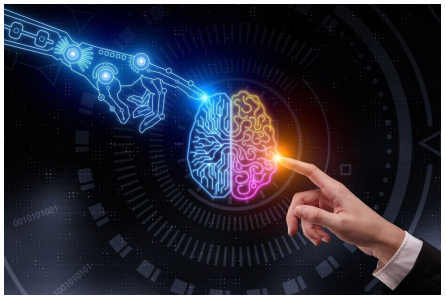
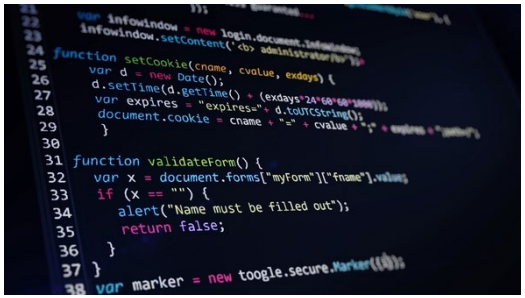
6. Materials for Electronics - NUEVO

OBJECTIVES AND TRANSVERSAL ASPECTS



Proposals within the scope of this topic should target the **development of new or improved materials** for electronics with a particular emphasis on at least one of the following:

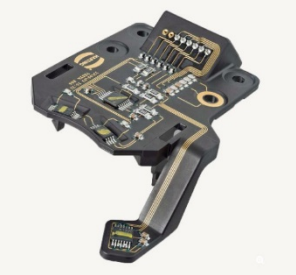


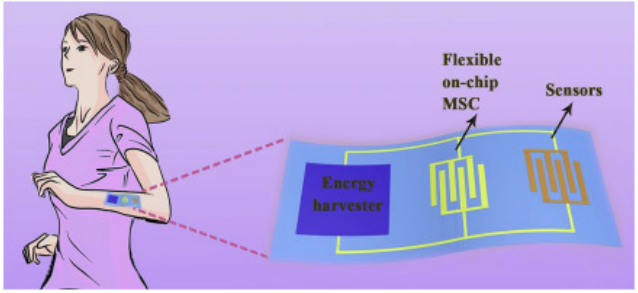


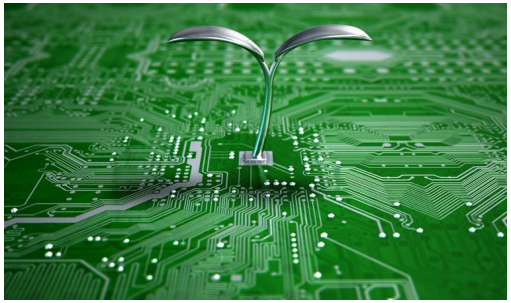
Proposals including and considering **modelling and artificial intelligence** approaches are welcome. **Green and sustainable materials** should be prioritized. **Increasing the efficiency** of the devices and **reduce the power consumption** and new improvements for **circular economy** are also encouraged.

6. Materials for Electronics - NUEVO

OBJECTIVES AND TRANSVERSAL ASPECTS



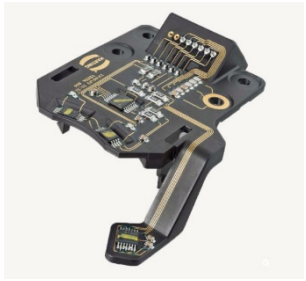


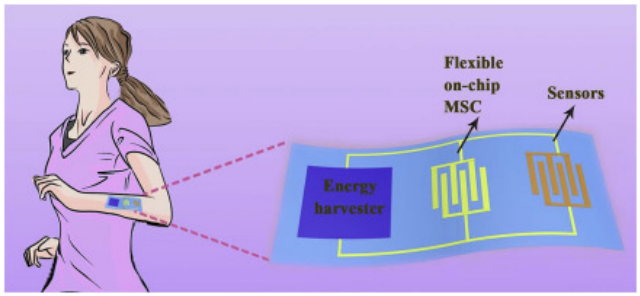


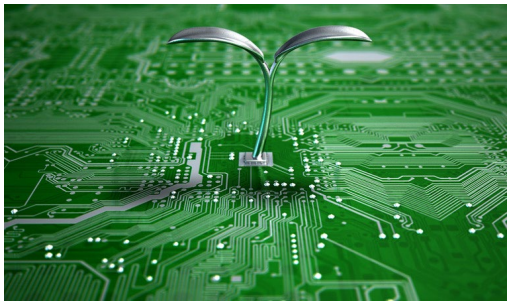
- Advanced materials in *sensor electronics*. Materials for ultralow power sensors, transductors, power electronics, *thermoelectrics*.
- *Smart advanced packaging* and materials for *cooling and thermal distribution management in electronics*. Coating, aggressive environments, Electromagnetic compatibility (EMC), self-cleaning, etc.
- *Wearable, flexible and stretchable* materials for green electronics. Substrates, 3D printed components and devices. Reliability, self-healing, hybrid integration, assembly and bonding/soldering of heterogeneous components.
- Advanced materials for *optoelectronic applications*: *Light Emitting Diodes (LEDs), optical communications*, other materials.
- Materials for *chipless applications*, transparent, flexible and printable electronics, new strategies for materials beyond silicon.
- **New high throughput manufacturing approaches** for electronic components: Printing technologies, additive manufacturing techniques, patterned coatings.
- **Low cost and disposable materials** for electronics: ink materials, polymers, cellulose, etc.
- Next generation of electronic materials for supercapacitors and other green technologies.
- 2D materials for advances in transistor technology and quantum computing.
- Magnetic materials for *spintronics and quantum technology*.
- Materials with multifunctionality: devices with radically different assembled materials.
- *Moulded interconnect devices* (MID): Plastic substrates with electrical infrastructure. The possibility of miniaturization of three-dimensional components with electrical conductivity is especially attractive for automotive and the medical sector, but it has the potential to also impact on other industrial fields.

6. Materials for Electronics - NUEVO

OBJECTIVES AND TRANSVERSAL ASPECTS







- *sensor electronics*. ,
  thermoelectrics.
- *Smart advanced packaging* *cooling and thermal distribution management in electronics*.
- *Wearable, flexible and stretchable* **green electronics**.

- *optoelectronic applications*: *Light Emitting Diodes (LEDs), optical communications*,
- *chipless applications*, .
- **New high throughput manufacturing approaches**

- **Low cost and disposable materials**.

- *spintronics and quantum technology*.

- **with multifunctionality**:
- *Moulded interconnect devices* (MID):

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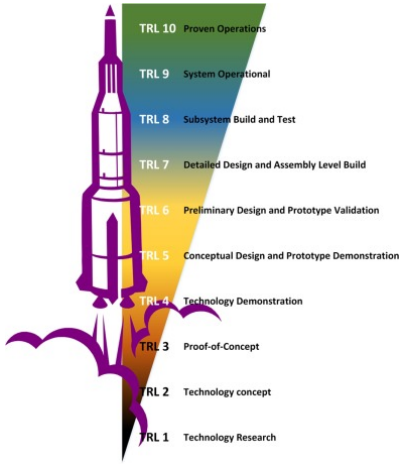
Prioridades Temáticas - TRLs



Topic	TRL 1	TRL 2	TRL 3	TRL 4	TRL 5	TRL 6	TRL 7	TRL 8	TRL 9
Topic 1: Materials for energy									
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 electronics									

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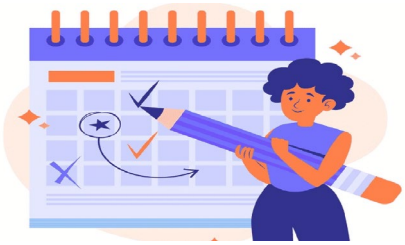
Fechas importantes



15 de marzo 2022 → **Lanzamiento *Call 2022***

15 de junio 2022 (12:00 – CET) → **Fecha límite para pre-propuestas**

17 de noviembre 2022 (12:00 – CET) → **Fecha límite para propuestas completas**

Febrero – mayo 2023 → **Comienzo de proyectos financiados**

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Thank you very much for your attention!!!

Questions?