

EIC Pathfinder: partner sought for micro-fabrication and scale-up of 3D multiferroic energy harvesters

Summary

Profile type

Research & Development Request Spain

Company's country

POD reference

RDRES20261006003

Profile status

PUBLISHED

Type of partnership

Research and development cooperation agreement

Targeted countries

• All countries

Contact Person

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Term of validity

6 Oct 2026
6 Oct 2027

Last update

6 Oct 2026

General Information

Short summary

A Spanish R&D organization is preparing a proposal for the Horizon Europe EIC Pathfinder Challenge "Advanced Materials for Miniaturised Energy Harvesting Systems". The project will assemble multiferroic nanoplatelets into 3D resonators converting light, vibration and heat into electricity for wireless sensors. A partner in microfabrication, scale-up and device integration and implementation in industry with regards to energy harvesting applications is sought for a research cooperation agreement.

Full description

The rapid growth of IoT devices and wireless sensor networks, which are mostly battery-powered, is increasing energy consumption and electronic waste. Ambient mechanical, thermal and radiant energy sources can provide power densities above $100 \mu\text{W}/\text{cm}^2$, enough to power centimetre-scale devices.

Multiferroic materials have shown that mechanical, electrical and magnetic states can be converted into usable electrical energy. However, current architectures usually rely on complex multilayer structures, interfaces or specialised processing, which limits integration and scale-up.

The Spanish technological centre specialised in multi-functional characterization, is a partner of the 3D MESH-TAP project. The project will assemble multiferroic nanoplatelets into 3D resonator architectures that convert photonic, mechanical and thermal energy directly into electrical energy, able to remotely power wireless sensors and actuators. The core technical objective is to fabricate polymeric microstructures with a maximum footprint of 5 cm x 5 cm using a custom polymeric photoresist, together with the associated electronics packaging. Conventional manufacturing techniques will be used to enable scale-up and device integration.

The company contributes in investigating structure-property relationship of 3D architecture.

In line with the call, the project targets laboratory validation of the integrated energetically autonomous system (TRL 4) and implementation in industry (TRL5) participation in the Challenge portfolio activities (benchmarking, working groups and integration insights).

The call is single-stage, funded through a lump-sum grant. The anticipated project budget is EUR 3,000,000-4,000,000 and the planned duration is 36 months. Call deadline: 28 October 2026.

The company is looking for a collaborative partner to contribute within fabrication, scale-up and integration activities and to contribute to market scoping.

Advantages and innovations

- Single multiferroic material platform harvesting several ambient energy sources (light, vibration and heat), avoiding complex multilayer stacks.
- Multiferroic contains no rare earths or lead, supporting the call objective of reducing reliance on critical raw materials.
- 3D architecture produced with conventional, scalable manufacturing processes.
- Battery-free power for IoT, smart city and health-monitoring sensors, reducing maintenance needs and electronic waste.

Technical specification or expertise sought

The partner should have proven experience in:

- Substrate-mounted microfabrication of polymeric microstructures (MEMS, photolithography, photoresist processing).
- Scale-up of microfabrication processes (e.g. wafer-level or batch processing).
- Electronics packaging and integration of energy harvesting modules into autonomous devices (low-power electronics, power management).
- Device characterisation and laboratory benchmarking.
- Desirable: experience in market scoping and exploitation of microsystems.

Stage of development

Concept stage

Sustainable Development goals

- **Goal 9: Industry, Innovation and Infrastructure**
- **Goal 12: Responsible Consumption and Production**
- **Goal 11: Sustainable Cities and Communities**
- **Goal 7: Affordable and Clean Energy**

IPR Status

No IPR applied

IPR Notes

Partner Sought

Expected role of the partner

The partner will join the consortium as co-investigator and lead the work package on fabrication, scale-up and integration of the energy harvesting modules. It will contribute to the TRL 4 validation of the integrated system, support the Challenge portfolio activities and provide input to market scoping and exploitation.

Type of partnership

Research and development cooperation agreement

Type and size of the partner

- **Big company**
- **SME 11-49**
- **SME 50 - 249**
- **SME <=10**

Call Details

Framework program

Horizon Europe

Call title and identifier

Advanced Materials for Miniaturised Energy Harvesting Systems – HORIZON-EIC-2026-PATHFINDERCHALLENGES-01-01

Submission and evaluation scheme

Single-stage

Anticipated project budget

3.000.000 - 4.000.000 €

Coordinator required

No

Deadline for EoI

20 Oct 2026

Deadline of the call

28 Oct 2026

Project duration in weeks

156

Web link to the call

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/HORIZON-EIC-2026-PATHFINDERCHALLENGES-01-01>

Project title and acronym

3D Multiferroic Energy Systems for Multi-Energy Harvesting, Transformation and Autonomous Power (3D MESH-TAP)

Dissemination

Technology keywords

- **01002007 - Nanotechnologies related to electronics & microelectronics**
- **01002010 - Printed circuits and integrated circuits**
- **01002012 - Semiconductors**
- **01002006 - Magnetic and superconductor materials/devices**
- **05005 - Micro- and Nanotechnology**

Targeted countries

- **All countries**

Market keywords

- **03003 - Power Supplies**
- **08001009 - Speciality/performance materials: producers and fabricators**
- **06003008 - Other alternative energy**
- **08002002 - Industrial measurement and sensing equipment**
- **03001009 - Other electronics related (including keyboards)**

Sector groups involved