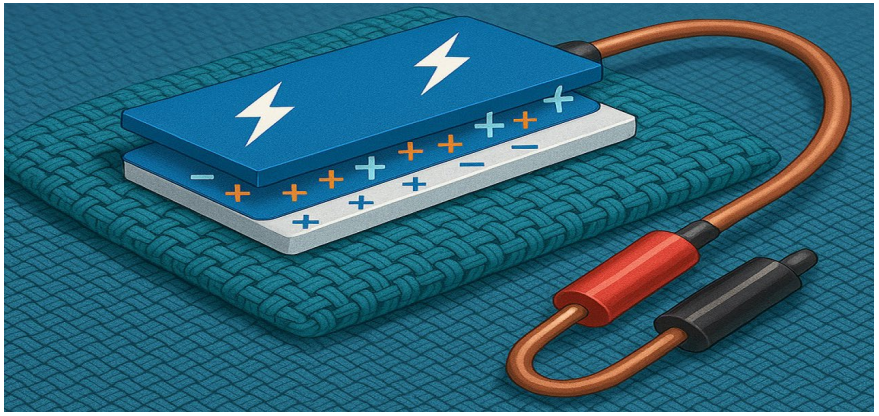
Technology Offer CSIC/PT/072

Device for high-precision triboelectric characterization



High-sensitivity standardized system for triboelectric characterization of materials. It detects minimal structural variations, and its easy integration into production lines makes it a strategic tool for Industry 4.0.

Intellectual Property

Priority patent application filed

Stage of development

Technology ready for testing in an industrial environment

Intended Collaboration

Licensing and/or co-development

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Market need

Materials with triboelectric properties offer great versatility, ranging from powering portable devices to monitoring environmental conditions, representing a key opportunity for advancing toward a sustainable and connected future. However, the lack of standardization in current measurement protocols and the reliance on approximate estimation methods limit result comparability and hinder the industrial adoption of these materials. This technology addresses the growing demand for reliable measurement methods for the development of triboelectric devices that can be used in smart sensors and IoT applications, sectors experiencing rapid growth.

Proposed solution

The technology developed enables the standardization and high-precision measurement of the performance of triboelectric materials, even under subtle stimuli and/or structural variations. It precisely controls key parameters such as pressure and frequency, and converts weak electrical signals into reliable data through a rectification and analysis system. Its modular design facilitates adaptation to different sample formats and experimental requirements. Additionally, it allows one of the materials to be used as a reference, enabling structural comparisons within the same compound.

Competitive advantages

- Enables performance measurement of different nanostructures by precisely controlling key parameters such as frequency, humidity, and pressure.
- It is a high-precision modular system, essential for optimizing designs and accelerating innovation in triboelectric systems.
- This technology provides comparable quantitative data, streamlining the validation and certification of new materials.