Researchers from the Spanish National Research Council (CSIC), the Catalan Institute of Nanoscience and Nanotechnology (ICN2-BIST), the Institució Catalana de Recerca i Estudis Avançats (ICREA) and the Consorcio Centro de Investigación Biomédica en Red (CIBER-BBN) have jointly developed an acquisition device that limits the leakage current in an electronic system for recording electrophysiological signals (such as neural one) where the transducer element is an active device that limits the leakage current and at the same time allows the bias point control on electrophysiological signal recording systems, preferably neural signals. This device could be used with any kind of active transducer, but preferably with solution gated graphene field effect transistors (gSGFETs).

Industrial partners, particularly manufacturers of electrophysiological signal recording systems, are being sought to collaborate through a patent licence agreement.

**An offer for Patent Licensing**

**A graphene-based transistor with limitation of leakage currents**

The implementation of electronic equipment for the clinical use of graphene transistors in neuronal interfaces has shown many advantages over current technologies based on metallic electrodes. Their ability to record very low frequency signals is one of them. Currently, these devices require a DC coupling in order to establish the optimal bias point control, which prevents compliance with the IEC60601-1 standards set to medical electronic equipment, which limits the maximum leakage current at low-frequency (DC) that can pass through a patient. The device comprises an active transducer intended to contact a body tissue, such as a brain tissue, as well as three passive components which limit the leakage current in any case, even in the case of electronics breakdown meeting electronic clinical equipment standards.

**Main innovations and advantages**

- The device has been validated in the laboratory and is ready for clinical validation.
- The device limits the current to lower values than 10 µA during normal operation, and lower than 50 µA in case of simple breakdown.
- The limitation of the leakage current allows the system to meet the IEC60601-1 standards set for electronic clinical equipment.

**Patent Status**

Priority European patent application filed, suitable for international extension.

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