Flexible Sensors for portable Magnetomyography: Envisaging innovation and Unveiling opportunities

Fact Sheet

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<th>Project Information</th>
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<td><strong>FlexiMMG</strong></td>
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<th>Start date</th>
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<tr>
<td>1 October 2023</td>
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**Funded under**
Marie Skłodowska-Curie Actions (MSCA)

**Total cost**
€ 0,00

**EU contribution**
€ 189 687,36

**Coordinated by**
HELMHOLTZ-ZENTRUM DRESDEN-ROSENDDORF EV
Germany

Objective

Flexible magnetoelectronic is a new and yet-to-be-explored path for future biomagnetic sensing especially to detect the ultra-low human magnetic field using magnetic field sensors. Most of the recent approaches have been framed using magnetoresistive (MR)- sensors, benefiting their fascinating applications, especially in the field of biomagnetism and advanced health monitoring systems, and unveiling several prospective and applicative domains. In this perspective, flexible MR sensing technology emerges as a new horizon in skin sensorics for recording and imaging various human electrophysiological phenomena such as magnetocardiography (MCG), magnetomyography (MMG), and magnetoencephalography (MEG). Despite
its promising futuristic applicability in biomagnetism and healthcare monitoring system, this sensing technology manifests several technical challenges, which limits its versatile functionality, and needs to be addressed properly for the development of NEXT-GEN healthcare technology and biomedical or biomimetic devices. In this proposed research, we intend to study the magnetic manifestation of human muscle activity, coined as MMG using an ultrathin flexible planar Hall-effect (PHE) sensor, which has not been explored or tested before. We aim to develop an efficient flexible sensing technology that enables us to detect a few pico-Tesla (pT)/ femto-Tesla (fT) signals at room temperature and demonstrates a feasible approach to reinvigorating the MMG technique. The proposed research directives also address the most awaited state-of-the-art sensing solutions to overcome the existing technical limitations in myograph recording. Moreover, this sensing technology offers qualitatively miniaturized, flexible, and implantable futuristic MMG sensing devices and paves the way towards full-fledged on-skin touchless biocompatible interactive human-machine interfaces. In the next stage, we aim to extend this research for challenging MEG applications.

Fields of science

- [electrical engineering](https://example.com), [electronic engineering](https://example.com), [information engineering](https://example.com)
- [sensors](https://example.com)

Keywords

- Flexible Magnetic Sensors
- Magnetomyography
- Planar-Hall effect
- Noise Analysis

Programme(s)

- [HORIZON.1.2 - Marie Skłodowska-Curie Actions (MSCA)](https://example.com)

Topic(s)

- [HORIZON-MSCA-2022-PF-01-01 - MSCA Postdoctoral Fellowships 2022](https://example.com)

Call for proposal

- [HORIZON-MSCA-2022-PF-01](https://example.com)
Funding Scheme

HORIZON-TMA-MSCA-PF-EF - HORIZON TMA MSCA Postdoctoral Fellowships - European Fellowships

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Net EU contribution
€ 189 687,36

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Sachsen > Dresden > Dresden, Kreisfreie Stadt

Activity type
Research Organisations

Links
Contact the organisation Website Participation in EU R&I programmes HORIZON collaboration network

Other funding
€ 0,00

Partners (2)

EIDGENOESSISCHE TECHNISCHE HOCHSCHULE ZUERICH

Switzerland

Net EU contribution
€ 0,00

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Italy

Net EU contribution

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Region

Nord-Est > Provincia Autonoma di Bolzano/Bozen > Bolzano-Bozen

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