



MAG4HEALTH

TOWARDS IMPROVED, LOWER-COST BIOMAGNETIC BRAIN IMAGING DEVICES

+ WHAT IS MAG4HEALTH?

Leti's Mag4Health Biomagnetic imaging solution dramatically improves brain and heart biomagnetic imagery, while cutting costs of MagnetoEncephaloGraph (MEG) devices.

Preliminary developed for the European Space Agency, Mag4Health solution is based on a disruptive quantum technology. It helps:

- Measuring the magnetic fields leveraging a laser and 100 billion of atoms, acting like small magnets to quantify the magnetic field
- Delivering images or biomagnetic activity of brain or heart
- Operating at ambient temperature
- No maintenance required

+ APPLICATIONS

Biomagnetic imaging can be used to detect, localize and diagnose various neuronal pathologies.

This technology is:

- The first noninvasive biomagnetic imagery tool that provides high spatial and temporal resolutions
- Recognized by Food and Drug Administration as a key technology for pre-surgery brain mapping, including localization of epileptic seizure focus
- Used in medical research to improve our understanding of the brain, to diagnose Alzheimer and schizophrenia, and to map functional region around tumor and brain lesions
- Potentially diagnosing arrhythmia and myocardial infarction relapse

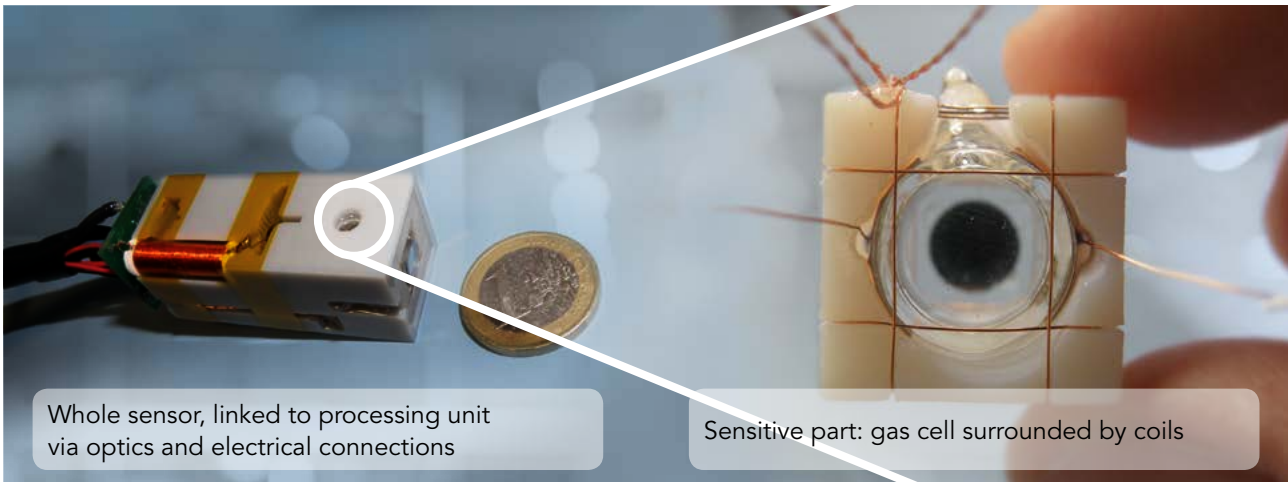
+ WHAT'S NEW?

Beyond the cost reduction for healthcare systems, both patients, surgeons and researchers will enjoy solid improvements:

- Fine mapping prior to brain surgery on epilepsy and tumors
- High spatial and temporal resolutions on neuronal activity
- 3 axes of measurements available on each sensor
- Lower costs by five
- Eliminate the need for cryogenic cooling
- Reduce the size and weight of the device's magnetic shield from 5,000 kilograms to 150 kilograms.
- Fit-all Helmet (children and adults)

KEY FACTS

- Best early stage innovation @ Innovation radar prize 2017, H2020
- 25 patents
- 30 years of developments
- 10 PhD thesis



Whole sensor, linked to processing unit via optics and electrical connections

Sensitive part: gas cell surrounded by coils

+ WHAT'S NEXT?

Mag4Health solution is currently being incubated within Leti's startup program. Goal is to create a start-up that will help:

- Divide MEG device costs by 5
- Develop Fit-all helmet compared to current room-size devices
- Increase access to MEG devices

INTERESTED IN SUPPORTING THIS PROJECT?

Contact

Matthieu Le Prado

matthieu.leprado@cea.fr

+33 438 781 879

Philippe Ruffin

Leti's start-up program director

philippe.ruffin@cea.fr

+33 438 784 538

Leti, technology research institute

Commissariat à l'énergie atomique et aux énergies alternatives

Minatec Campus | 17 avenue des Martyrs | 38054 Grenoble Cedex 9 | France

www.leti-cea.com

