



Mag4Health



Towards improved, lower-cost biomagnetic brain imaging devices

What is Mag4health?

CEA-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

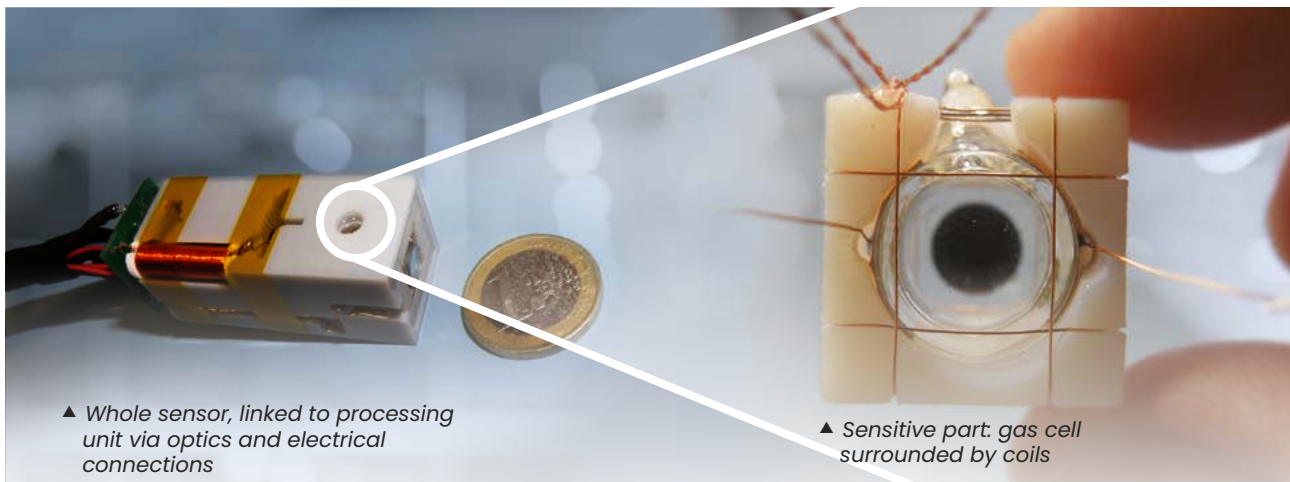
What's new?

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 CEA-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 this technology?

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