Sensorized device for the analysis of a fluid by means of acoustic waves

SCUOLA NORMALE SUPERIORE

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OWNER: INTA Systems s.r.l.

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Invention

The invention is a **portable device** for the **detection** of **traumatic brain injuries (TBI) biomarkers** from rapid **blood analysis**.

It is a lab-on-a-chip biosensor based on nano-acoustics. Fully electrical, easy to use, portable, cost effective, with high sensitivity for the detection of TBI biomarkers in circulating bodily fluids.

The targeted medical need is the cost and time required to diagnose TBI. The conventional anlysis are computerized thomography (CT) and magnetic resonance (MR). These exams could be massively optimized by this invention.

The invention has been developed at the NEST laboratory by a research group from **Scuola Normale Superiore** and the Nanoscience Institute of the National Research Council of Italy (**CNR-NANO**).

- **Fully electrical**
- **Ultra sensitive (sub-nanomolar)**
- **Wireless integration capabilities**
- **Passive**
- **Very large scale production capabilities**
- **Multiple detections (multiplexed)**
- **Easily customizable for different pathologies and/or application**

Drawings & pictures

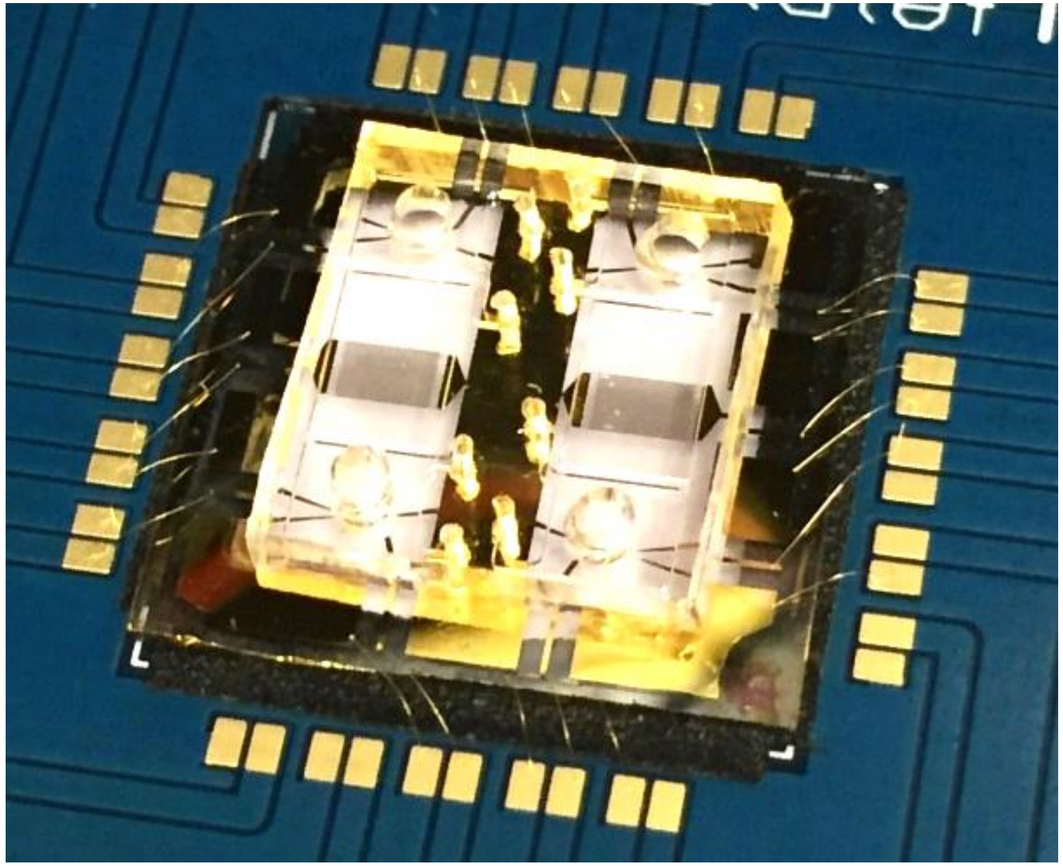
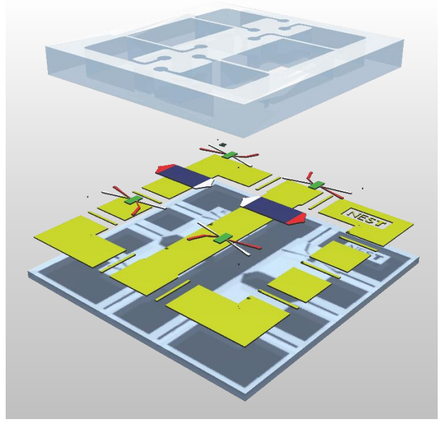
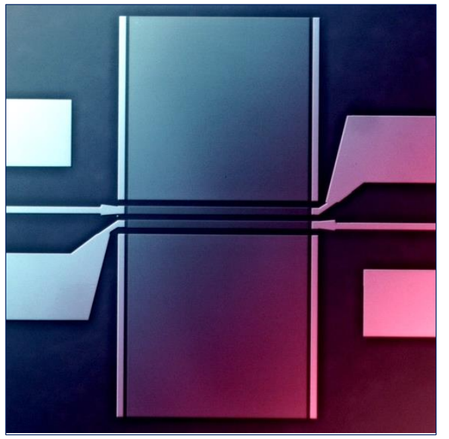


Photo of a chip installed on a printed circuit



Exploded illustration of the chip



Micrograph of a sensor

Industrial applications

The invention can find **application as a sensor** in the following fields:

- **Biomedical**
- **Security**
- **Food-analysis**
- **Environmental control**
- **Industry 4.0**

The sensor can be easily customized for other ultra sensitive analyses (e.g., contaminants, microbiological species).

Possible developments

In the 2021, the patent, which is currently TRL 5, was purchased by INTA System s.r.l. A spinoff company of Scuola Normale Superiore and CNR-NANO. In March 2021 INTA (www.intasystems.net) received **private investments** for the device engineering and validation.

The patent is highly versatile and the owner company can develop custom products for the detection of **virus, bacteria, proteins/antibodies and other bio-analytes**. The application fields are **security**, **food-analysis, environmental control, biomedical, industry 4.0.**

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INTA
INTELLIGENT ACOUSTICS SYSTEMS

SCUOLA NORMALE SUPERIORE

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