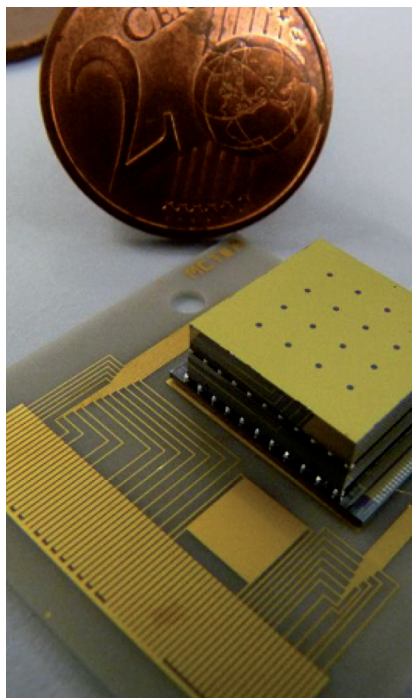




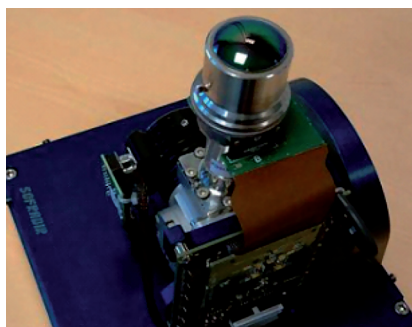
Optics Inside

A new generation of integrated infrared sensors

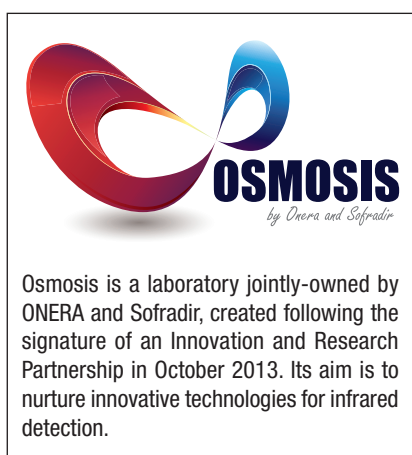
Infrared sensors are improving at an accelerating pace, thanks to progress in microelectronics. Tomorrow's IR detectors, using simplified optics, or no external optics at all, will be smaller and higher performance, while offering new high-resolution, hyperspectral or 3D detection capabilities. ONERA has developed a line of innovative miniature IR imagers, dubbed "Optics Inside", to support the development of new solutions for aerospace, defense and industry.



"Camera on a chip"



A demonstrator of the "Optics Inside" camera



Technologies

- Compact cameras offering wide-field infrared vision (equivalent to the human field-of-view), with an architecture imitating that of the human eye (SOIE concept – Sofradir Optics Inside).
- Ultra-compact "cameras on a chip", integrated directly in the detector, which simultaneously produce several images of the same scene. Combining these images delivers enriched details: super-resolution, 3D multispectral.

Requirements

- Keep pace with evolving demand for sensors on light airborne platforms, used for flight control, surveillance and self-defense.
- Add new intelligence capabilities to current systems by integrating new optical functions (spectral discrimination, 3D).
- Reduce the cost of intelligence systems, facilitate their integration on light platforms, and thus expand the use of imaging systems.

Applications

- Defense: intelligence, surveillance, control
- Security: site surveillance
- Commercial: remote sensing, thermography, automobiles, home automation

Advantages

ONERA's scientific and technical expertise

- High-value-added solutions based on advances in science
- Build prototypes to demonstrate the benefits of a technology
- Set up a co-design approach with detector manufacturers to control production costs

ONERA's human resources and organizational experience

- Internationally recognized research team, ideally positioned between academia and industry, to maintain leadership in IR detection technology.
- New types of partnership between ONERA and manufacturers to accelerate technology transfer.
- A network of innovative small business and technology institute partners to quickly develop demonstrators.