



# Company presentation

Sept 2013

# Company snapshot

<b>Founded</b>	<b>September 2003</b>
General Manager	Dr. Giovanni Basile
Field of activities	Environmental Monitoring Agrifood analysis Biomedical Space research
Operative Staff	Composed by open-minded PhDs in biotechnology and electronic, mechanical and IT engineering
QHSE	UNI EN-ISO 9001-2008 n°4349-A

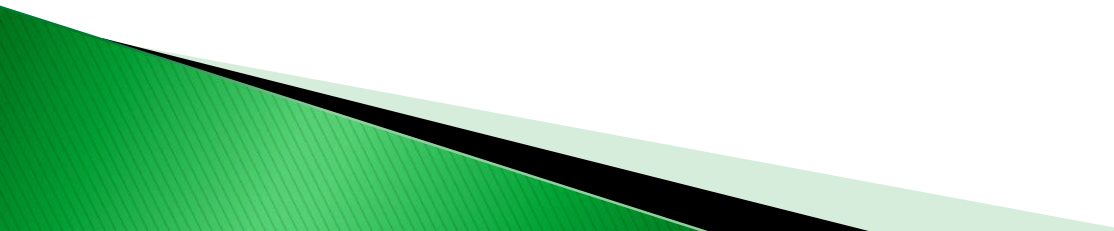
# Our Vision and Mission

## ▶ Vision

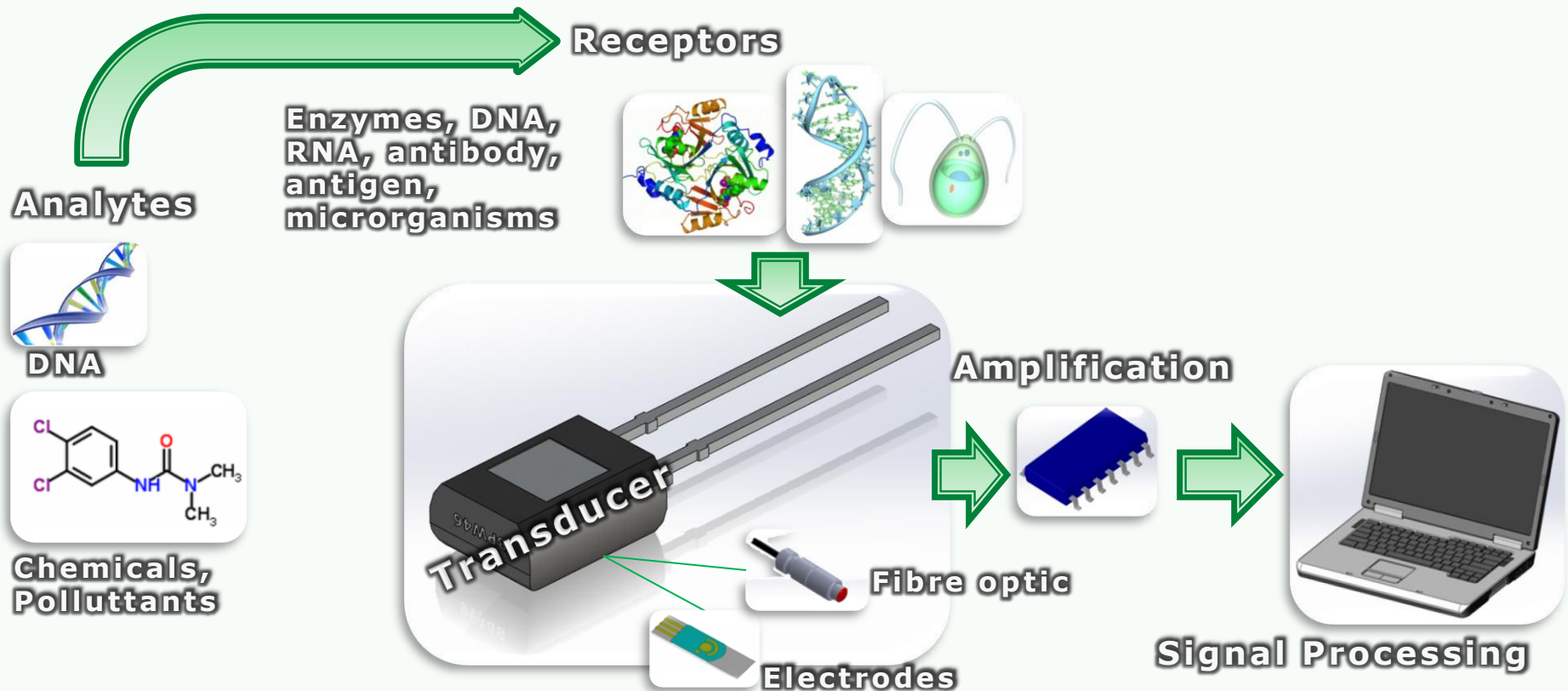
To be a leading company supporting basic life sciences through advanced manufacturing and multidisciplinary competences, attracting new business and research opportunities.

## ▶ Mission

providing expertise in design, prototype fabrication, calibration, testing and product engineering of miniaturized modular automated instruments for biotechnology, agrifood, environmental monitoring, biomedical application.



# What is a biosensor?



Biosensors are devices which use a biological recognition element retained in direct spatial contact with transduction system (IUPAC definition)

# Research focus

Research at Biosensor Srl is particularly focused on developing hi-tech instruments aimed at supporting lab activities taking advantage of advanced solutions in the field of automation, microfluidic, ICT and precision electronic to add new value and reliability to standard measurements in several areas.

# Instruments



Fluorescence  
System



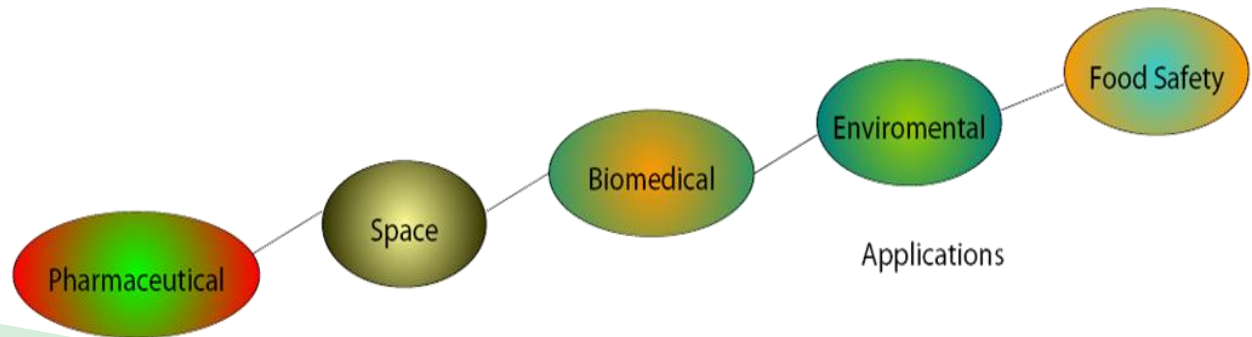
Amperometric  
System



Others System  
(Integrations)



Special  
Application

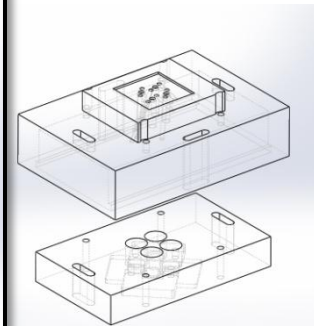
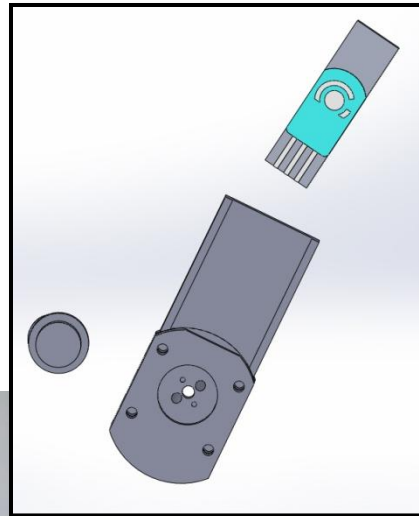
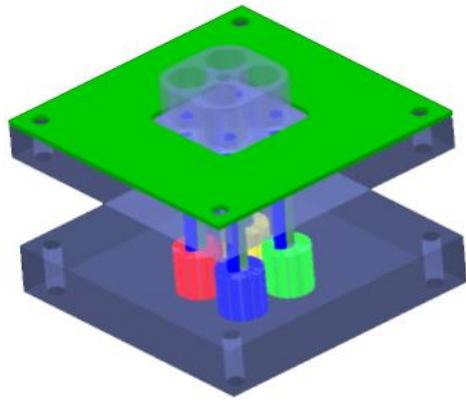




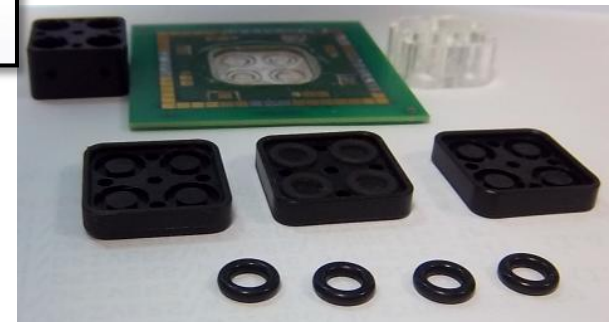
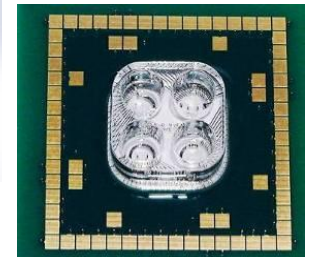
# Expertise

Innovative design and prototyping of optical and amperometric biosensors

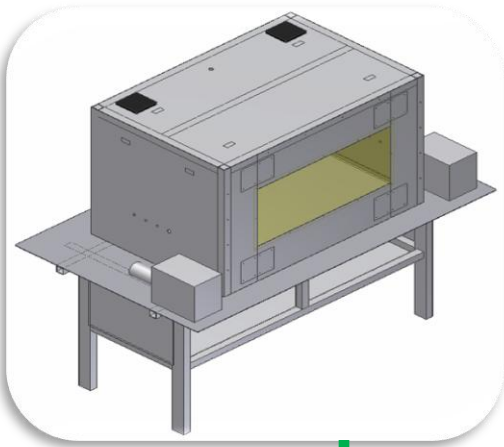
## 3D OPTICAL MODULE



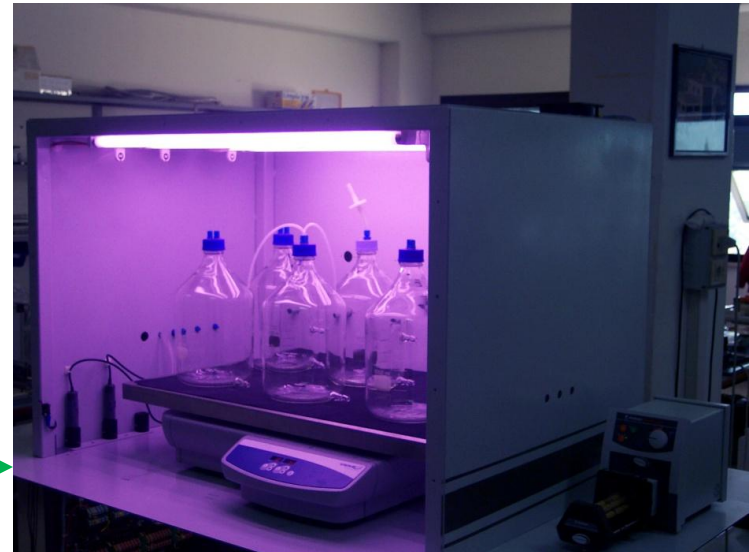
## INNOVATIVE PARTS



# Expertise



Design and development of photobioreactors for application in food and soil and water treatment and bioremediation



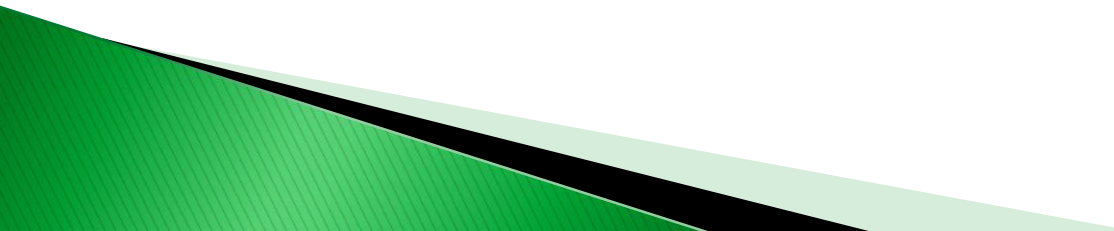


# Expertise

## Biomediators immobilization techniques

### **Alginate immobilization**

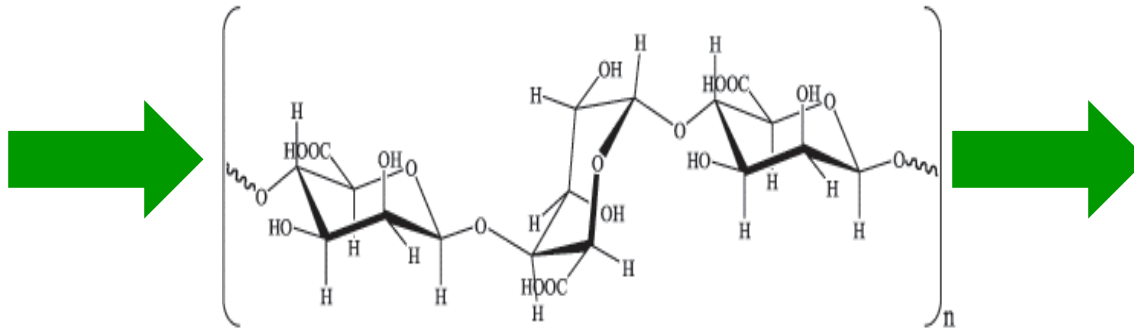
Alginates, extracted from brown seaweeds, are linear polysaccharide copolymers of (1-4)-covalently linked  $\beta$ -D-mannuronate and  $\alpha$ -L-guluronate monomer residues arranged in different sequences. Due to their abundance, lack of toxicity and compatibility with biological systems, alginates are widely used for immobilization procedures. Gelation of alginate is achieved by an ion exchange between sodium from the guloronic acid salts and divalent cations such as  $\text{Ca}^{2++}$  entrapping the biomediator in a networks.



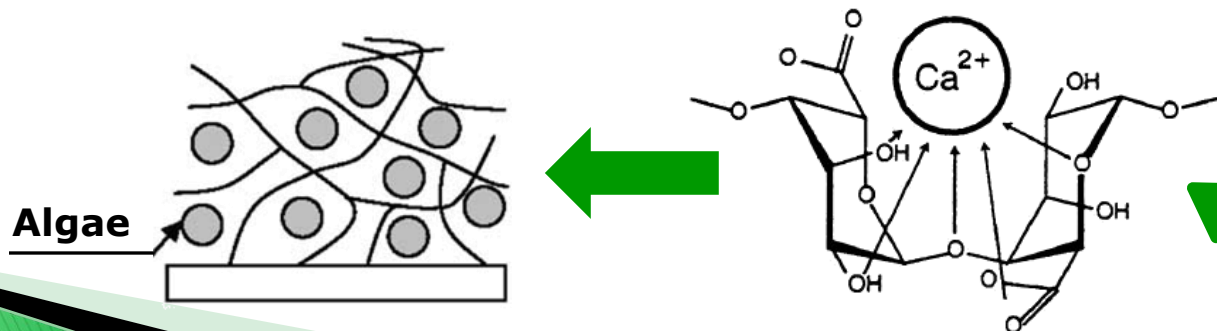
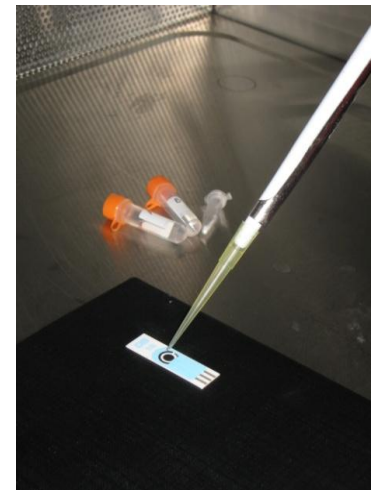
# Expertise

## Biomediators immobilization techniques

### Alginate immobilization



4.5 $\mu$ g Chlorophyll/SPE  
4\*10<sup>5</sup> Cells/SPE



Algae

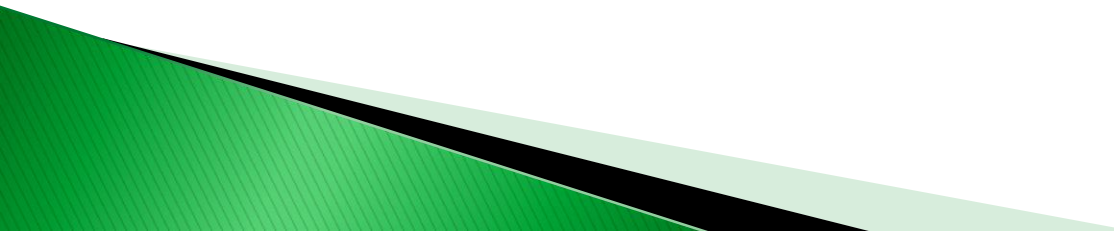
# Expertise

## Biomediators immobilization techniques

### **Immobilization of *C. reinhardtii* Whole Cells**

#### **Nafion® Immobilization**

Nafion® , that is a sulfonated tetrafluoroethylene based fluoropolymer-copolymer discovered in the late 1960s by Walther Grot of DuPont . In biosensor field, this polymer was often used to immobilize enzymes, nucleic-acids, and other macromolecules. It creates a protective film onto biomediator immobilizing over the Electrode.

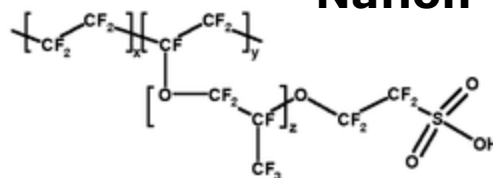
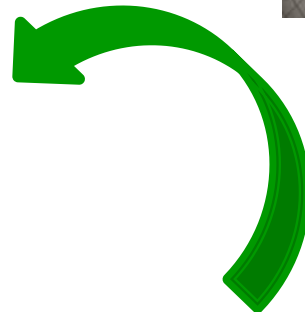
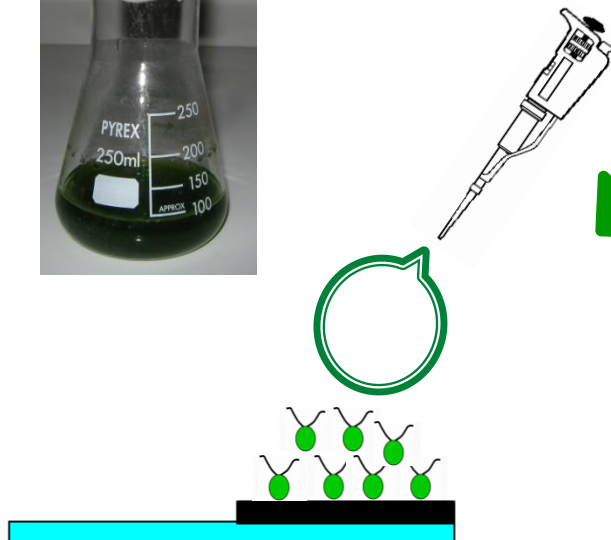
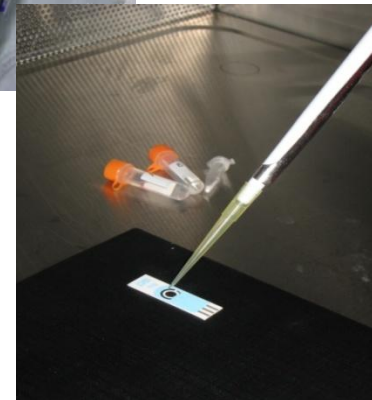
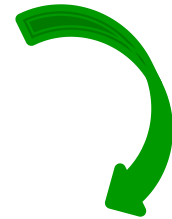


# Expertise

## Biomediators immobilization techniques

### Immobilization of *C. reinhardtii* Whole Cells

#### Nafion® Immobilization



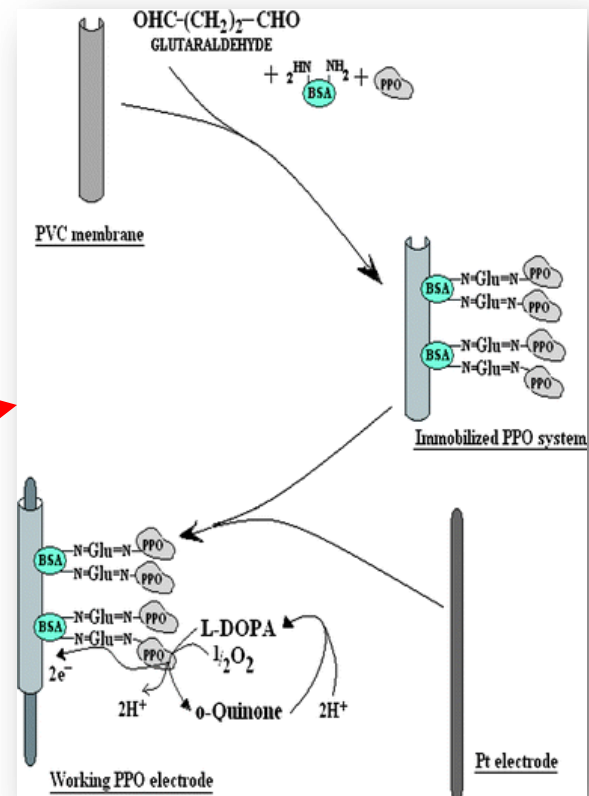
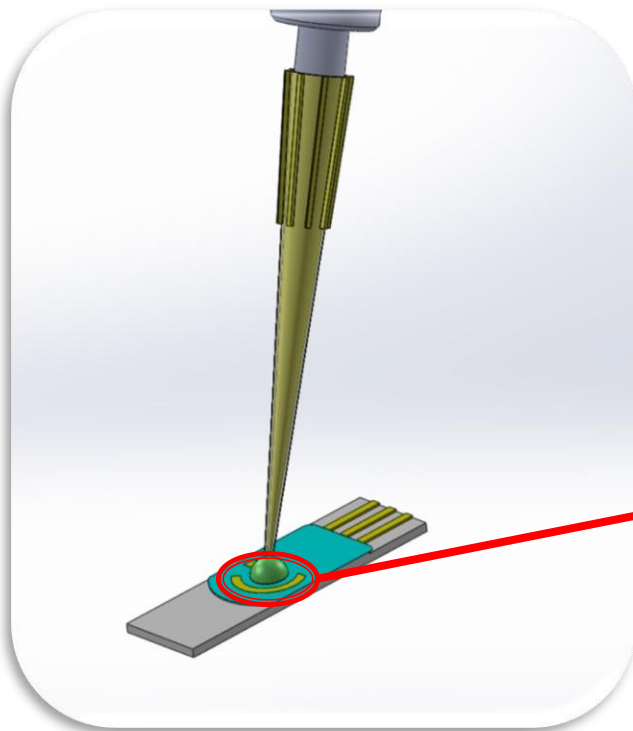
Nafion®



# Expertise

## Biomediators immobilization techniques

### Chemical immobilization



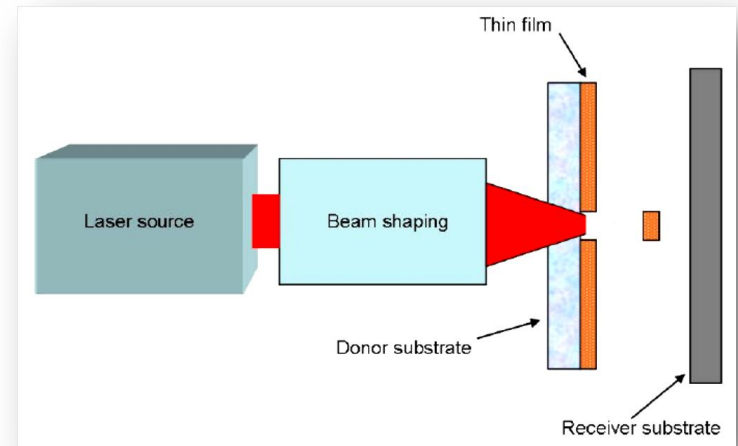


# Expertise

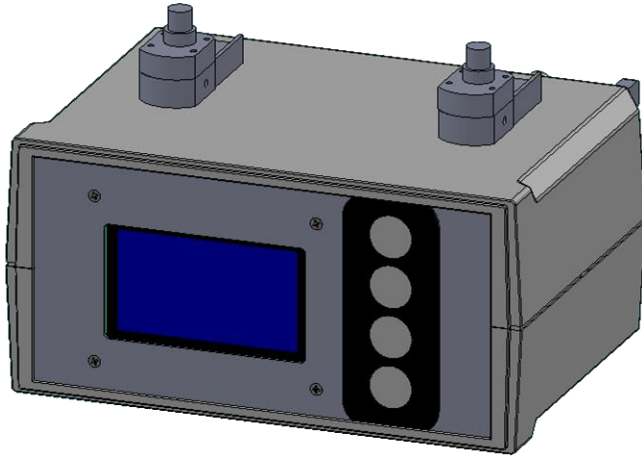
## Innovative immobilization techniques

### **Laser Printing immobilization (in collaboration with the University of Athens)**

Laser-induced forward transfer (LIFT) is a technique which enables the controlled transfer of a thin film of a material, from a transparent carrier to a receiving substrate. The laser transfer method has widely been used for the precise deposition of various materials (metals, oxides, ceramics, polymers, biomolecules etc.) during the last two decades.



# 3D CAD prototyping of remarkable products



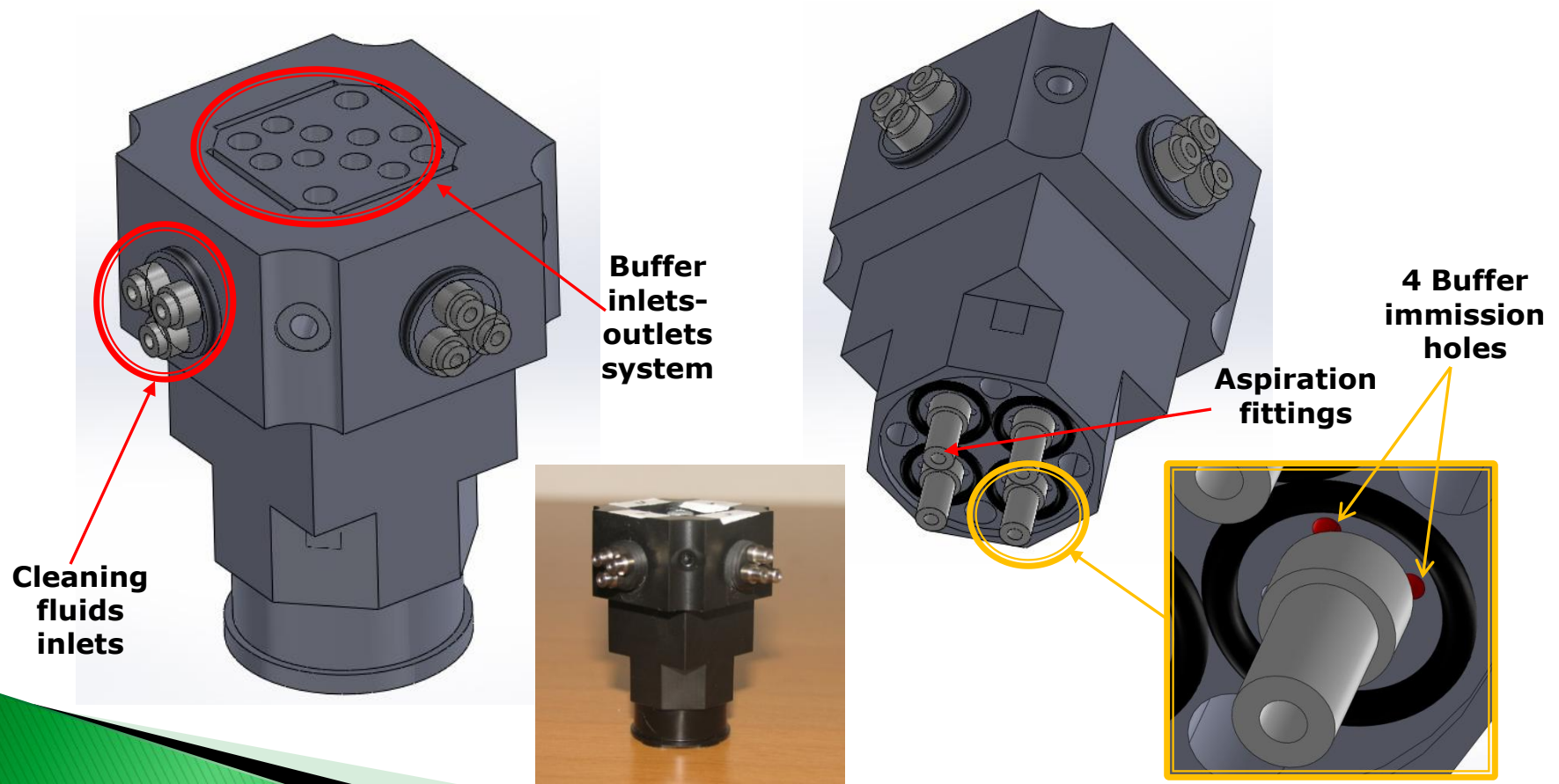
Multitask



Multibioplat

# 3D CAD prototyping of microfluidic solutions

- Multibioplat fluidic module



# Successful projects

- ▶ Our staff is constantly involved in national and international collaborations and projects.
- ▶ We experienced FP7 programme as coordinator of two successful projects:
  - ▶ BEEP-C-EN (<http://www.beep-c-en.com/>)
  - ▶ Sensbiosyn (<http://www.sensbiosyn.com/>) and as SME partner in other financed proposals.
- ▶ Moreover Biosensor Srl has been involved in space projects in collaboration with ASI-ESA and NASA.

# Ongoing FP7 projects

## ITN-Marie Curie

### ▶ SO<sub>2</sub>S

The Singlet Oxygen Strategy: sustainable oxidation procedures for applications in material science, synthesis, wastewater treatment, diagnostics and therapeutics;



# Ongoing national projects

## MISE - Industria 2015 – New Technologies for Made in Italy Call

### ▶ BEST

Integrated system of biosensors and sensors for the monitoring of wholesomeness and quality, as well as for traceability in the cow milk chain;

# Contacts

- ▶ [www.biosensor.it](http://www.biosensor.it)
  - ▶ Cordis website
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