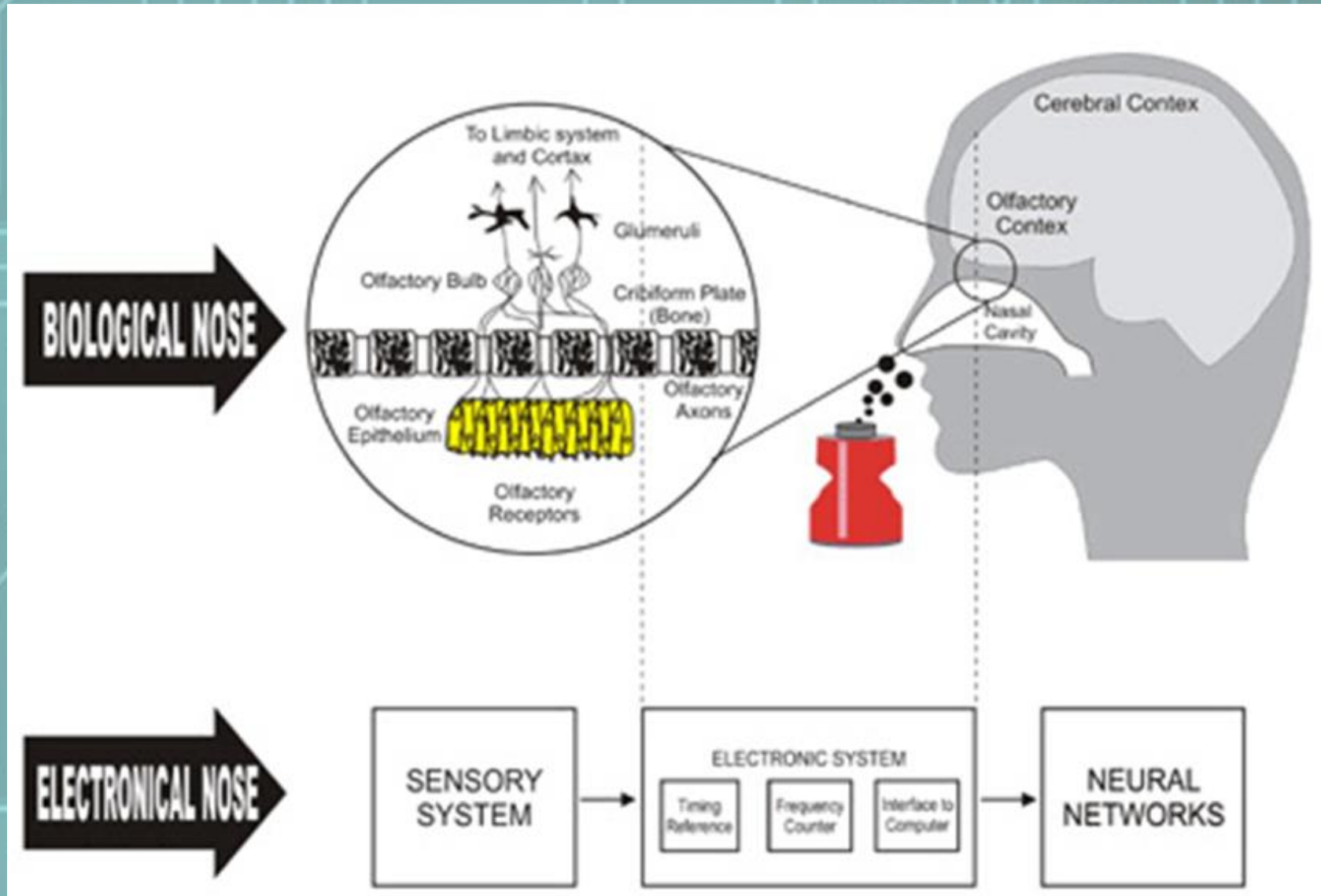




Photoelectronic tongue for liquids recognition

Electronic nose (tongue) concept



E- nose and E-tongue at the current market



Disadvantages:

- High cost
- Complicated laboratory analysis
- Lack of flexibility to analyst

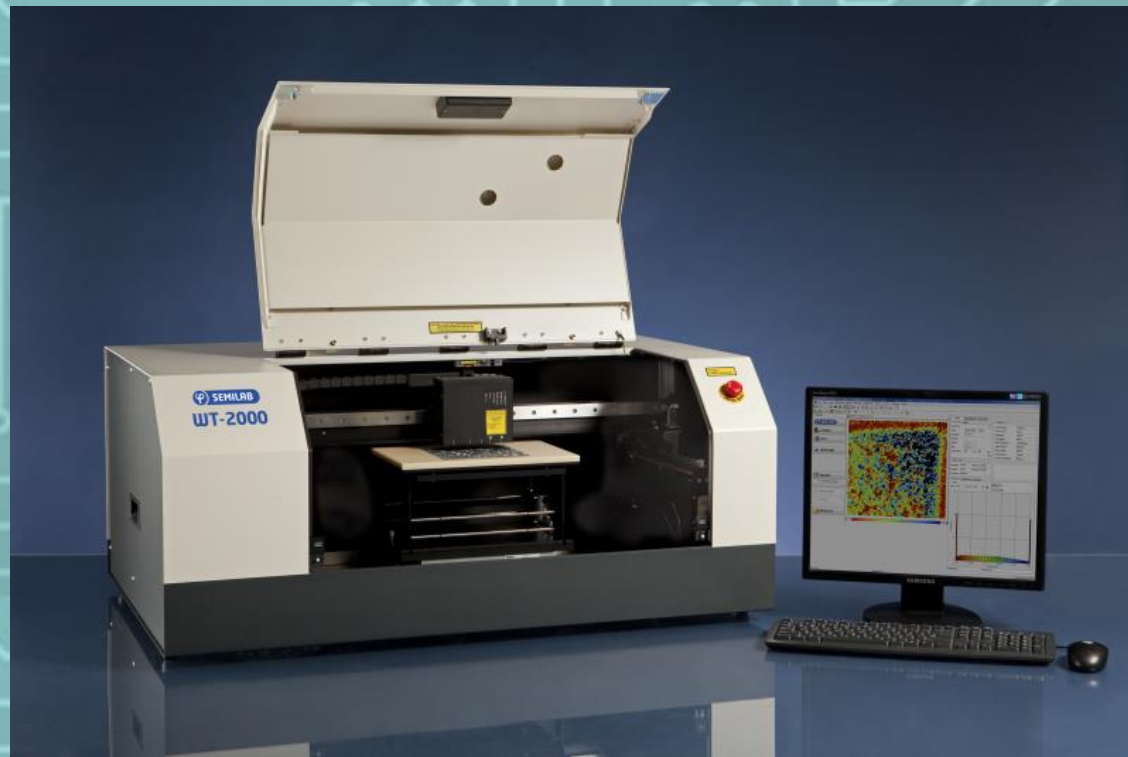
Companies: Alpha Nose, Aribal Technologies, Samsung, etc.



According to our Patent the liquids are characterized with the help of SEMILAB setup which was designed to measure lifetime in semiconductors.

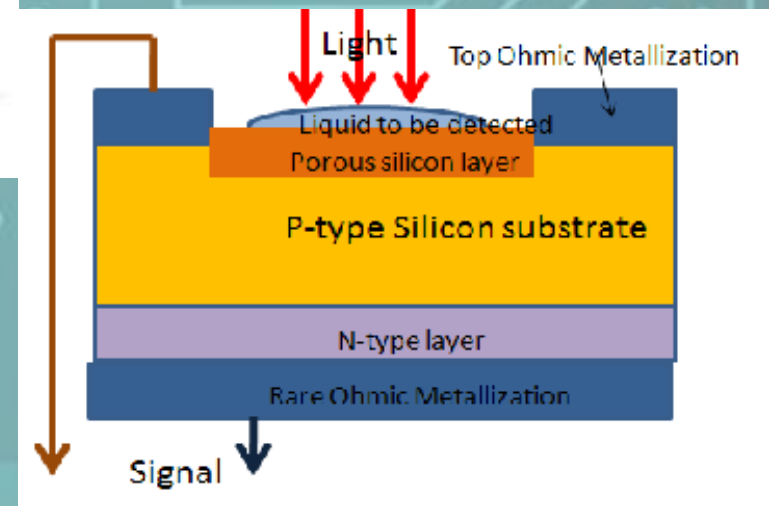
Price of set up- 190 000 Euro

Lytyvnenko S., Lysenko V., Alekseev S., Skryshevskyy V. Procédé et dispositif pour caractériser un milieu fluide à l'aide d'un substrat semi-conducteur, Patent № 1262879 (2013), PCT/FR2013/053134.



Description of proposed mobile e-tongue

The proposed mobile e-tongue consists from 1) special box with electronics and measured system, 2) sensor strips, 3) laptop or tablet PC, 4) computer program. The set of responses (light induced photovoltaic signals) is individual for the certain substance and can be used for its selective recognition (electronic fingerprint).



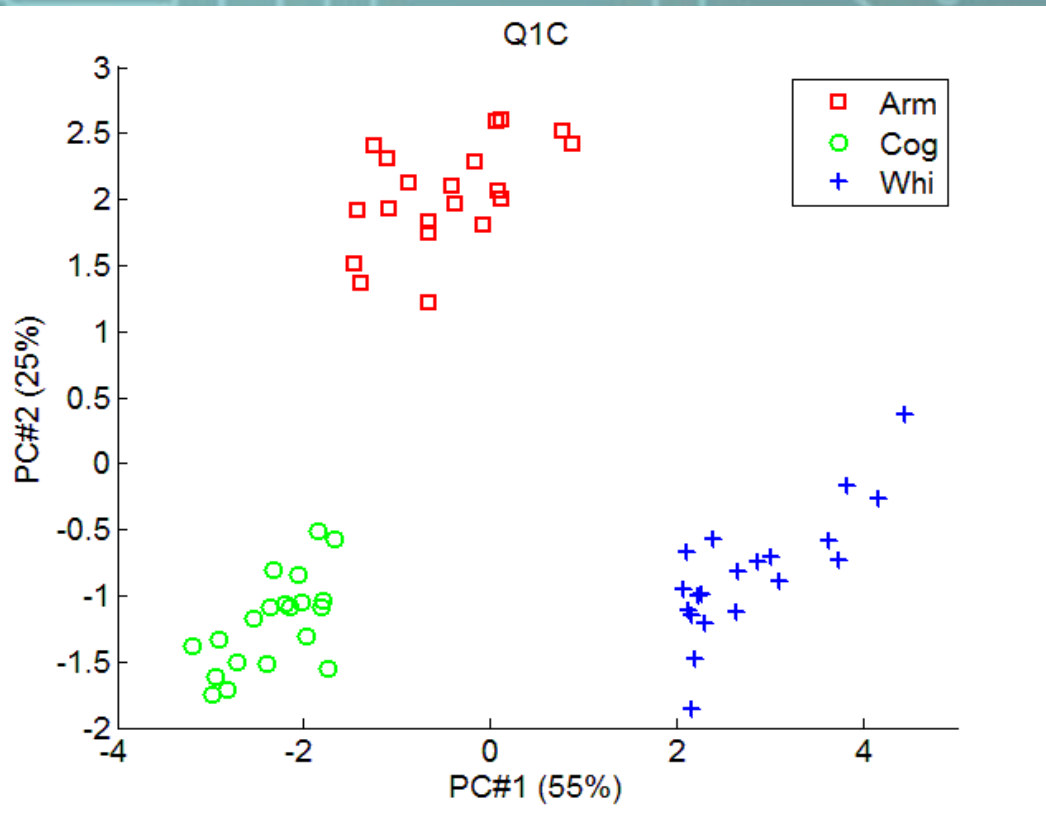
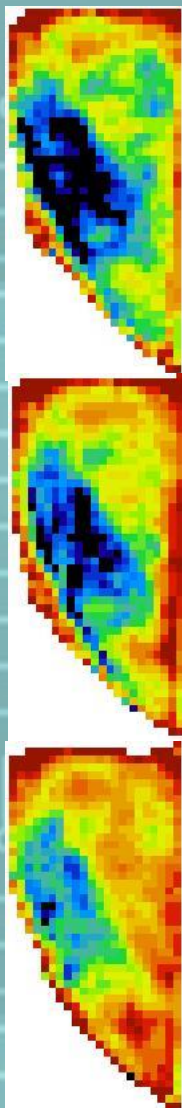
S. Lytvynenko, D. Bielobrov, V. Lysenko, V. Skryshevskyy, Procédé et dispositif pour caractériser un milieu fluide à l'aide d'un transducteur photo-électrique, Patent N° 1262884 (2013), PCT/FR2013/053139.

What is the electronic fingerprint?

Armagnac

Cognac

Whisky



Advantages:

- ❑ Simplicity and low cost analysis comparing with conventional chemical analytic techniques**
- ❑ The substance characteristics are presented as 2D or 3D mappings**
- ❑ Creation of fingerprint (electronic photography) of smell, liquids, etc.**

Possible market:

- ❑ Control of explosives, drugs, toxic substances.**
- ❑ Detecting of counterfeit products.**
- ❑ Testing the quality of materials both during production and during storage use.**
- ❑ Control of natural transformation of food liquids and aging of substances**

What has been done:

- Concept of sensor screen
- Laboratory prototype
- Series of sensor elements for the detection of certain liquids
- Algorithms of sensors treatment
- The efficiency of the method on the recognition of different liquids and biological objects were tested
- It was obtained 2 international patents

Skill of team from TSNUK:

- 7 chapters in International monographs
- More than 100 scientific articles in International journals with high impact
- International Grants: NATO, INTAS, Horizon 2020, TEMPUS , etc
- Ukraine Grants : STCU, MSE, etc.

PhD Sergii Litvinenko,
Prof. Valeriy Skryshevsky

For the commercialization it must be:

- The choice of liquid (gel, syrup, cream, oil, parfumery...) to be tested and controlled (**1 month**)
- Elaboration special test strips (sensor) (**6 months, 30000 Euro**)
- Carry out of supplementary investigation and metrology
- Development of portable device (**5 months, 20000 Euro**)
- Elaboration of new software for the express analysis (based on neural networks) (**5 months, 20000 Euro**)
- Filing of a new international patent and its support (PCT) (**6 months, 20000 Euro**)

Duration – 12 months

Total budget up to 90 000 Euro

Price of device for selling- 1000 Euro