Ferran Vera Gras

Chemical Transducers Group / GTQ IMB-cnm (CSIC)
http://gtq.imb-cnm.csic.es/en

Bilateral Meetings

- 04.03.2015 Wednesday (9.00h - 11.05h)
- 04.03.2015 Wednesday (11.05h - 13.10h)
- 04.03.2015 Wednesday (13.10h - 15.15h)

Description
Chemical Transducers Group

The Chemical Transducers Group (GTQ) is a reserch group of IMB-CNM (CSIC).

The IMB-CNM is the largest public microelectronics research and development centre in Spain. Its main activity is research and development in silicon-based micro- and nano-electronics.

The IMB-CNM belongs to the Spanish National Research Council (Consejo Superior de Investigaciones Científicas, CSIC), the main spanish research institution and one of the largest in the world.

What we do?

- We solve conventional analytic problems by sensors fabricated with microelectronic technology.
- We define new (bio)chemical transducers based on different materials and interaction methods and their adaptation to market requirements.

How we are?

- We are a solid state chemical sensors area reference group obtained by silicon technologies.
- We are an interdisciplinary group with recognized international scientific excellence.

How do we work?

- Focused on applications with a clear market potential.
- Knowing the real problematic of our sensors users.
- Assuring the quality control of our products by pre-established protocols.

What are they?

Chemical Transducers are Integrated devices based on microelectronic technology with the capacity to translate chemical information in a processable signal of electrical or optical nature.

The operation of the transducers is based on the activity of 2 distinct areas of the device:

Receptor: Recognition element that interacts selectively with the substance we want to detect.
Transducer: Chip that translates the interaction between substance and receptor into an electrical or optical processable signal.

The use of chemical transducers is an emerging technique to measurement of chemical parameters due to the capacity to incorporate the advantages of microelectronics technology to detection methods (new or existing).Chemical Transducers

Advantages of microelectronic technology

- High reliability
- Quick response
- Reduced size
- Robustness and solid state nature
- Massive fabrication at low cost
- Reproducibility

¿What types of sensors do we developed?

- Potentiometric (ISFET): Selective to different analytes, ionic and molecular.
- Amperometric: Detection of molecular species, COD, biochemical reactions (biosensors) and potential redox.
- Impedimetric: Conductivity and complex impedance measurement for chemical and biosensors development.
- Optics
- Multi-sensors: Integrated transducers (electrochemical, optical, temperature) that combine the capacity of different individual sensors in a single chip.
- To facilitate the use of sensors we develop the required electronic instrumentation

Advantages of using our sensors in your applications

- Portability
- Immediate results
- Direct determination in liquid and semi-solid samples
- Pre-treatment sample not required
- “In situ” measurement
- Out signal compatible with the industrial standards

Organization Type
Research Group
Organization Size
1-10
Twitter
https://twitter.com/GTransductorsQ
Areas of Activities

HARDWARE

1. Mobile devices accessories
2. Mobile devices
3. Monitoring systems and equipment
4. Test and measurement equipment

Offer

Bridle for monitoring perimeter and behavier of plants, fruits... using wireless and mobile devices

Research groups of CSIC and Seville University has developed a low cost (micro)opto-mechanical bridle device for determining and/or monitoring with high precision, during long periods, changes in the size or section of structures with geometry, composition, hardness, dimension and diverse nature. Perimeter changes are used as a control and quality parameter of structures in agriculture (plants growing, trees).

The (Micro)bridle device is manufactured with a flexible and transparent material, such as PDMS or another with similar characteristics. The device consists of a fixation area - where the structure is set to be monitored -, a (micro)cantilever sensor - flexible and mobile - which responds to changes in the structure section and an optical sensor as the signal transduction element. The light intensity collected at the transduction element will change depending on the angle of inclination of the (micro)cantilever, which is proportional to the diameter changes of the structure.

Changes in structures section have been evaluated so far, by simple visual inspection and quantitatively by measuring tapes. All these systems are not very accurate and do not allow real-time monitoring of structure changes.

Furthermore, the use of this device can be extended to other vegetal organism or structures (trees, plants , fruits) or any other type of structure in which is necessary to study size, mechanical properties or physiological variations and its response to physical, chemical or environmental stimuli.

The behavior of plants and fruits can be monitored using wireless/RFID networking via mobile devices.

Keywords: agriculture networks section perimeter diameter plants fruits bridel
Cooperation Offered

1. License agreement
2. Technical co-operation
3. Outsourcing co-operation

Cooperation Requested

1. Investment/Financing
2. Technical co-operation
3. Outsourcing co-operation

Offer

Chemical micro-sensors in sweat (pH, Na+, Cl- ...) for sports and mhealth use

We're searching for companies and institutions interested in lab-on-a-chip device for monitoring pH, ions (Na+, Cl-, etc.) in sweat, incorporating chemical sensing to new or "in the market" mobile accessories used for mhealth and professional or amateur sport.

GTQ have experience in fields as chemical sensing, microelectronics, microfluidics and wireless data transmission.

The device, produced with microelectronic technology, will be reliable, low cost, small, energy efficient and, depending on application, for single or multiple use.

Keywords: health sport microelectronics device accessories appcessories chips
Cooperation Offered

1. Technical co-operation
2. License agreement

Cooperation Requested

1. Technical co-operation
2. Investment/Financing

Offer

New mobile devices accessories for chemical analisis in fields as Health, Foods and Enviromental and

New mobile devices accessories for chemical analisis in fields as Health, Sports, Foods, Enviromental and Water Control.

Keywords: health sports mobile accessories appcessories chips enviroment water
Cooperation Offered

1. Outsourcing co-operation
2. Technical co-operation
3. Manufacturing agreement
4. Investment/Financing

Cooperation Requested

1. Outsourcing co-operation
2. Technical co-operation

Request

Looking for partners for H2020 European projects

The Chemical Transducers Group (GTQ) develops solid-state chemical sensors (chips) obtained using microelectronic technology (CHIPS), solving analytical problems in several sectors as Health, Foods and Beverage and Enviromental and Water Control.

The use of chemical transducers is an emerging technique to measurement of chemical parameters due to the capacity to incorporate the advantages of microelectronics technology to new or existing detection methods.

We're looking for companies interested in develop - using these technologies - professional devices for chemical analisis of parametres such as pH, Ions (Na^+, Cl^-, Ca^{2+}, Mg^{2+}, etc.) Heavy Metals, Conductivity, Chemical Oxygen Demand (COD), microorganism and many others adressed to sectors as foods and enviromental control.

Keywords: microlectronic health sport chips device accessories appcessories enviromental water
Cooperation Offered

1. Manufacturing agreement
2. Technical co-operation
3. Outsourcing co-operation

Cooperation Requested

1. Investment/Financing
2. Technical co-operation
3. Outsourcing co-operation

Offer

Looking for partners for H2020 European projects

The Chemical Transducers Group (GTQ) develops solid-state chemical sensors (chips) obtained using microelectronic technology (CHIPS), solving analytical problems in several sectors as Health, Foods and Beverage and Enviromental and Water Control.

The use of chemical transducers is an emerging technique to measurement of chemical parameters due to the capacity to incorporate the advantages of microelectronics technology (low cost, small) to new or existing detection methods using mobile devices or mobile accesories.

We're looking for companies interested in develop - using these technologies - professional devices for chemical analisis of parametres such as pH, Ions (Na^+, Cl^-, Ca^{2+}, Mg^{2+}, etc.) Heavy Metals, Conductivity, Chemical Oxygen Demand (COD), microorganism and many others adressed to sectors as foods and enviromental control.

Keywords: chemical sensors device accesories
Cooperation Offered

1. Outsourcing co-operation
2. Technical co-operation
3. Manufacturing agreement

Cooperation Requested

1. Outsourcing co-operation
2. Technical co-operation
3. Manufacturing agreement
4. Investment/Financing