Project Number: 257401

A highly integrated and sensitive POrous SIlicon based lab on a chip for multiple quantitaTIVE monitoring of food allergies at point of care.

Specific Targeted Research Project

Information Society Technologies

Deliverable D11.18: Press release announcing innovation developed within the whole the project

Due date of deliverable: **February 28th 2014**

Actual submission date: **May 19th 2014**

Start date of project: 2010-09-01 Duration: 3 ½ Years

Organisation name of lead contractor for this deliverable: **UVEG**

Revision **[2.0]**

Project co-funded by the European Commission within the Seventh Framework Programme		
Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

1. About this deliverable

1.1. Introduction

This document contains a copy of a press-release announcing innovation developed within the whole project.

1.2. Scope of the deliverable

The deliverable really just provides a copy of a press-release.

1.3. Structure of this deliverable

The report is laid out according to the tasks defined in WP11 as follows:

T11.6: Dissemination of Positive research results to the non-scientific/technical media at large (e.g. newspapers, magazines, TV, periodicals). Months: 1-36. (D11.3, D11.9, D11.18) (All partners)

Contents

2. Description of work performed

2.1. T11.6: Press release announcing innovation to date within the project

2.1.1. The Press release

"Innovative technologies for a rapid food allergy test"

Over 15 million people in Europe – including eight percent of all children - suffer from food allergies, and this number is growing steadily. Currently, children who portray mild symptoms may undergo a skin prick test that is not only lengthy but particularly painful and usually very traumatic. Researchers from the Positive consortium of industrial partners, 6 universities and research institutes after 3 ½ years in a 2.9M€ funded EC project have taken a large step forward to the realization of putting a food allergy machine on every pediatrician's desk, an instrument that can produce test results in 15 minutes from a miniscule drop of blood.

Today's food allergy tests can be very expensive, take a long time, as well as being both difficult to administer and quite painful. This is especially true for the common skin prick test on young children whose arms are not large enough to take the regular test made on adults. Instead they have to be held face down for long periods of time while the pediatrician scratches food extracts into different marked patches on the skin of the child's back.

"Positive, which has just recently finished, was a high risk but high gain project, with many known challenges at the time of its conception as a proposal 5 years ago, but since then it has also provided us with plenty more along the way. Although with the time and resources available we were not able to fully develop all of the technologies necessary to realize the aforementioned food allergy machine we made great progress and in doing so developed some very innovative technologies. In fact those technologies themselves could find a way into commercial products for food allergy diagnostics or other applications." Says Daniel Hill Project Coordinator of Positive and researcher in the UMDO group at the University of Valencia.

Those technologies include:

(1) OSTE materials[1]. OSTE is the first polymeric material developed specifically for the needs of microfluidic devices. We envision that OSTEs will be a very strong alternative for rapid prototyping of microfluidic devices thanks to rapid turnaround, high yield and properties very close to those found in the final commercial products. (KTH)
(2) A proprietary robust polymer coating that makes the surface functionalization of sensors easier, faster and reproducible, enables a high probe density and has a good stability. The area of potential applications is very diverse and large. (CNR)
(3) A high yield method for transfer bonding of fragile porous membranes and other thin films to micro-structured supports, using plasma-etched micro-patterned double side adhesive films. (KTH)
(4) A reliable and reproducible process to obtain porous membrane with highly tailored structural properties (thickness, porosity and pore size) and that shows a fluidic-friendly behavior (UNITN).
(5) A flow through photonic biosensor based on macro-porous free-standing membranes compatible with multiple measurement methods (UVEG).
(6) A micro-well platform enabling simultaneous flow through and optical inspection. This unique technology has applications in single cell studies, where the response of individual cells

[1] Mercene Labs AB is a spin-off Company from KTH commericializing OSTE, which was developed during FP7 InTopSens and FP7 Positive, for device fabrication by customers.

trapped in the micro-wells to stimulants supplied in the flow stream can be followed by microscopy in real-time. (KTH, CSEM, UVEG)

(7) A high performance sensor chip thermal control system that has already been implemented in optical instrumentation in over a dozen international University and industrial research laboratories. (Farfield)

(8) A module developed for blood filtering that enables several 100 µl of whole blood to be filtered and plasma to be generated for subsequent analysis. This will find uses in lab on chip applications which require alternatives for plasma extraction from whole blood samples which is currently done in dedicated laboratories by centrifugation. (CSEM)

(9) A module for sequential actuation of a set of fluids through a microfluidic cartridge, which also enables priming of the cartridge with CO_2 and avoids the introduction of air plugs between the different fluids[2]. (CSEM)

(10) An instrument based on multiple spot phase change measurements on a flow through membrane. This overcomes limitations found in solid surface, planar assay systems which have to be incubated for long periods of time for the molecules of interest to be captured at the sensing surface. (CSEM, UVEG)

(11) Algorithms for phase sensitive measurements on opto-ASICs (CSEM)

(12) A fluorescence based milk and egg allergen microarray for detection of specific IgE and IgG with sensitivity and reproducibility comparable to the commercially available ImmunoCAP ISAC from Thermo Fisher. (C-UB, CNR)

(13) A method to increase light absorption in 3D random porous nanostructures through the use of rough pores. This can have applications in photovoltaics. (UNITN)

(14) Extension of the Layer Transfer Process (also termed silicon on nothing) to lower resistivity substrates by transferring a thin layer of re-crystallized silicon onto foreign substrates. This has applications in photovoltaics. (UNITN)

"From the advances made in biosensing and the development of a working automated instrument over the past 18 months the consortium remains convinced that with some further development a prototype could be realised that could give up to ten different measurements of food allergies at a time which would tell us to what degree the person is allergic. From there it would be fairly straight forward step to scale it up for hundreds of food allergies in order to be able to test all the food allergies at the same time."

- Read more about the project on Positive's homepage

For more information, contact Daniel Hill, daniel.hill@uv.es

[2] CSEM is working on a demonstrator of a compact, stand-alone pressure driven fluid handling module that this is based on the initial attempts implemented for the flow in the measurement system of POSITIVE. It is intended to have this ready for SLAS 2015 in Washington DC to present to the lab automation and instrumentation community. CSEM is also implementing such a module in two currently running projects, one for food quality monitoring and one for 3D cell tissue generation for pharma research.

3. Conclusions

A press release was made in May 2014 announcing the innovation developed within the whole of the Positive project.