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Development of a low-cost point-of-care test for Tuberculosis detection

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Revision **[1.0]**

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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)	

Description of the third newsletter release

Reproduced below is the third newsletter, wrapping up the project results.

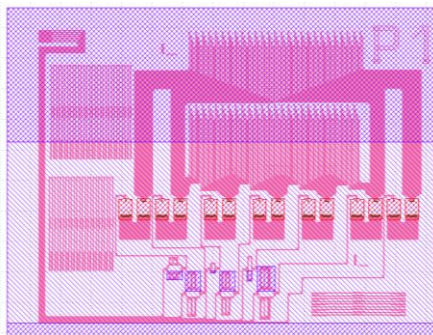


Development of a low-cost point-of-care test for Tuberculosis detection

Welcome to the final issue of the Pocket project newsletter! In the last year, we wrapped up the project, have significantly improved the stability and robustness of the platform. We were able to detect LAM at concentrations down to 475 pg/ml in unprocessed urine. Also, we have achieved a specificity of 90% and a sensitivity of 100% with 20 stored clinical samples, even including HIV-negative TB-positive patients.

SiN photonics technology

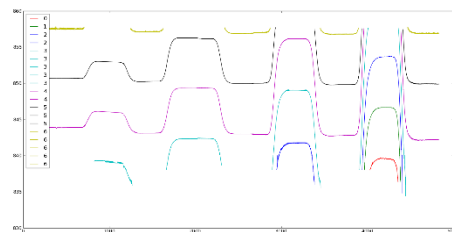
Imec has continued to refine its high-contrast silicon nitride fabrication platform, such that a large number of chips can be fabricated at low cost, with integrated cladding to cover the reference part of the sensor.



UGent has optimised and published a

record compact-footprint on-chip spectrum analyser with a 1nm resolution.

The photonics biosensor with integrated spectrum analyser was fabricated and the bulk limit of detection was evaluated. With a LOD of $7 \cdot 10^{-7}$ RIU, this is much better than our required milestones, and the possibility to push this even further still exists.



Antibody cocktail

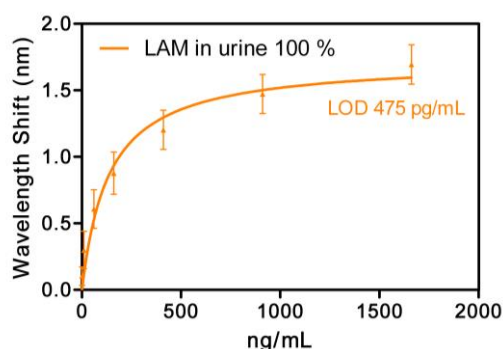
Lionex has been hard at work to further optimise their antibodies for the TB biomarkers, which turn out to be very stable and selective with dissociation constants in the range 10^{-8} – 10^{-9} . They will play an important role in creating a sensitive and selective test.

Surface chemistry

Imec has developed a wafer-scale vapour-phase silanisation protocol which enable large-volume throughput. CSIC has

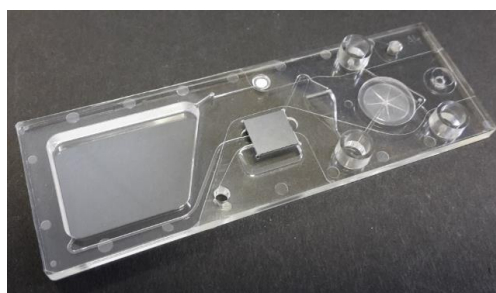
developed the surface chemistry on top of this to optimally attach the antibodies and minimise the non-specific adsorption.

Biosensor experiments show that LAM can be detected at concentrations down to 475 pg/ml in unprocessed urine.



Microfluidics

Microfluidic ChipShop has developed a novel packaging approach to integrate the silicon nitride chips directly in a polymer fluidic cartridge, while leaving parts of the chip exposed for easy optical access.



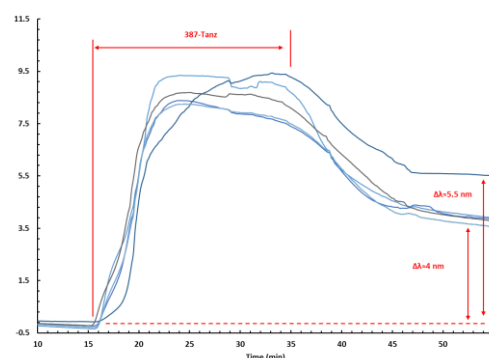
Instrumentation

Trinean has refined their first prototype of the readout instrument, and now an number of optimised second-generation instruments are available.



Preclinical tests

Using a panel of 10 positive and 10 negative actual clinical samples collected from various countries all over the world yielded only a single false positive. All other samples were correctly identified, including those of 5 TB-positive HIV-negative patients, which typically have very low LAM concentrations.



Finding out more

For more information about the project, consult our website www.pocket-proj.eu.

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