Electronic Supplementary Material (ESI) for Lab on a Chip.

Supplementary Material:

An automated optofluidic biosensor platform combining interferometric sensors and injection moulded microfluidics

C. Szydzik[1], A.F. Gavela[2], S. Herranz[2], J. Roccisano[1], M. Knoerzer[1], P. Thurgood[1], K. Khoshmanesh[1], A. Mitchell[1], L.M. Lechuga*[2]

[1] School of Engineering, RMIT University, Melbourne Australia

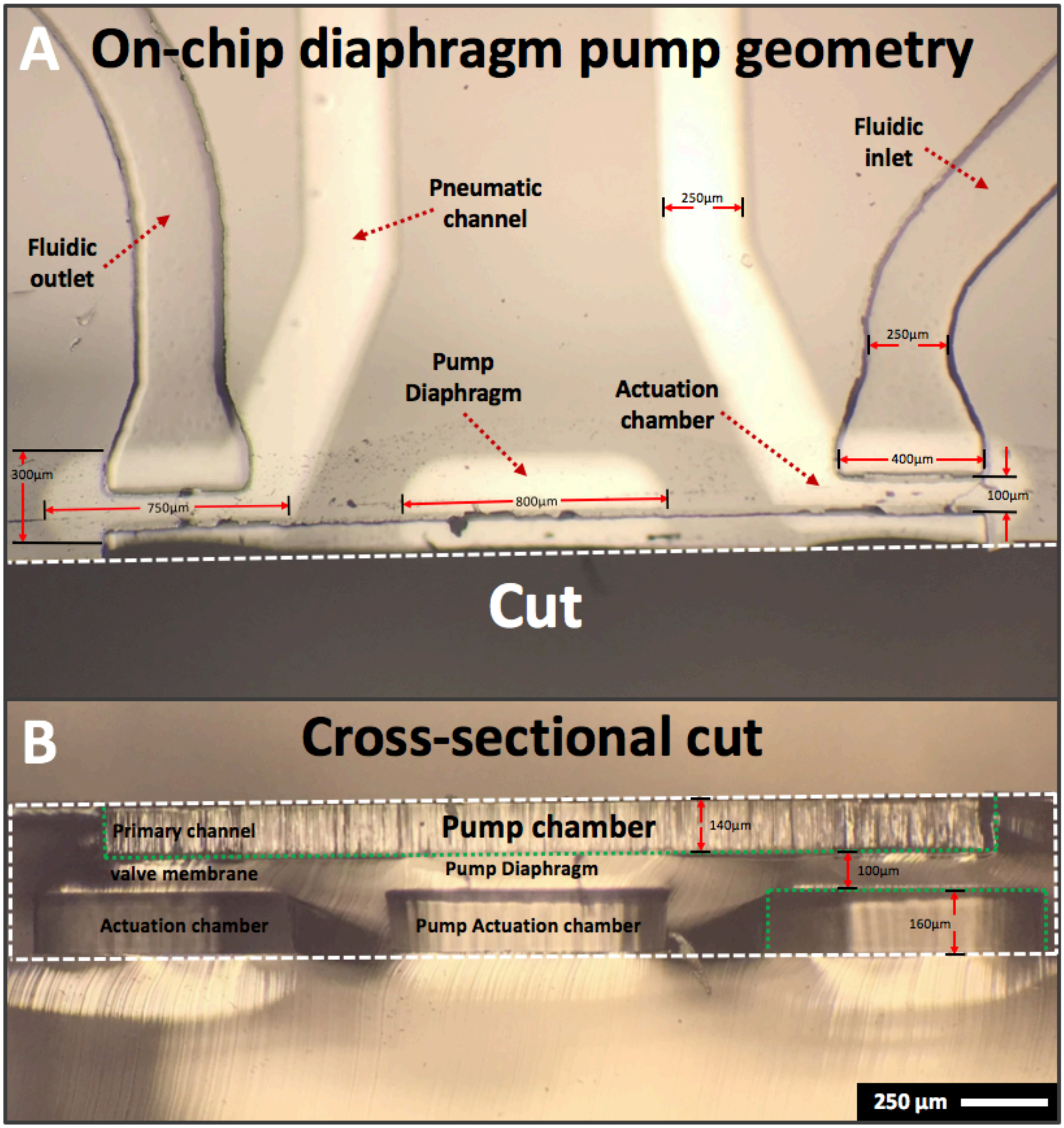
[2] Nanobiosensors and Bioanalytical Applications Group. Catalan Institute of Nanoscience and Nanotechnology (ICN2). CSIC, CIBER-BBN and The Barcelona Institute of Science and Technology, Campus UAB, Bellaterra, 08193 Barcelona, Spain.

* Corresponding authors:
Laura.lechuga@icn2.cat

Supplementary Material SM-1: Experimental setup

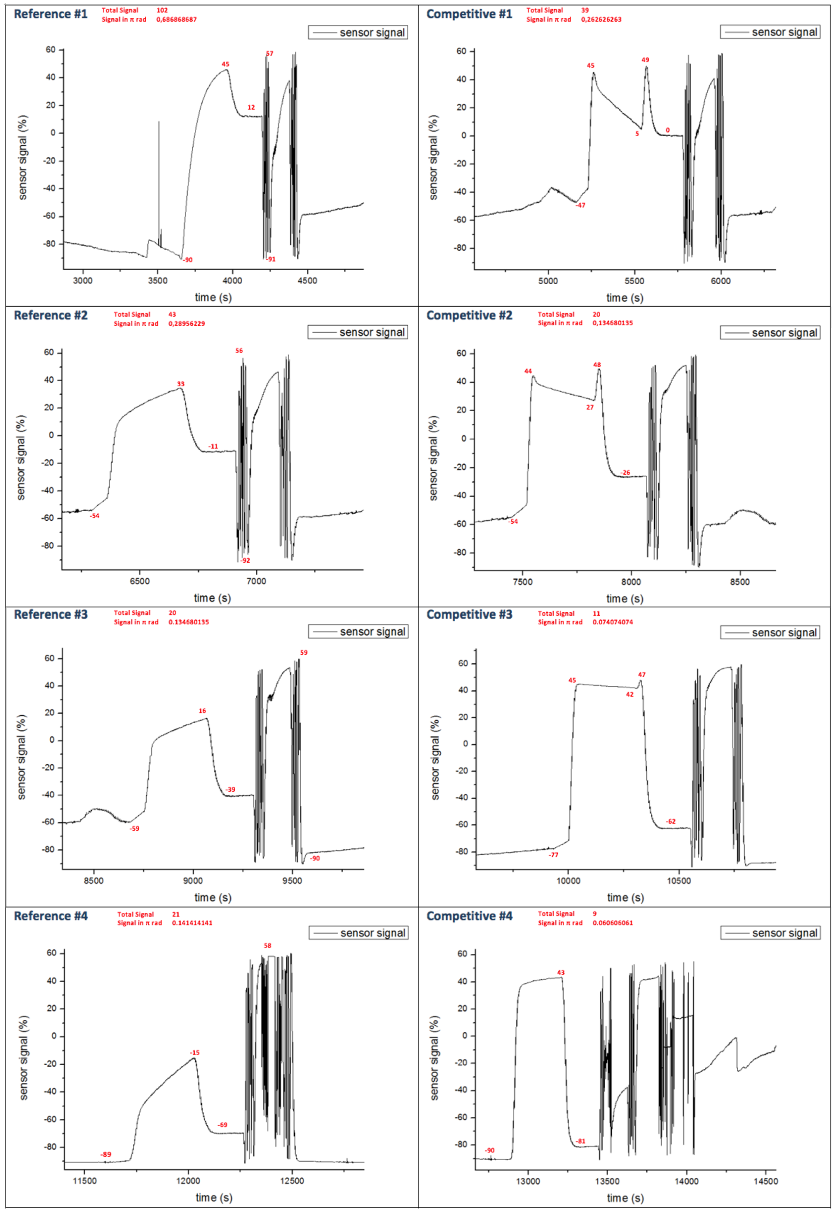
Operation of the Bimodal waveguide biosensor was conducted using an experimental setup similar to previously outlined [1]. A He-Ne laser (632.8nm, 10 mW) was end-fire coupled to the biosensor through a 40x microscope objective using TE polarization, the resultant interferometric signal was acquired with a duel segment photodiode (S5870, Hamamtsu) and data analysis was performed using LabVIEW software (National Instruments, USA). The microfluidic module was clamped to the BiMW sensor directly between a PMMA clamp and a thermal regulation stage, stabilising intrinsic signal drift due to environmental thermal influence

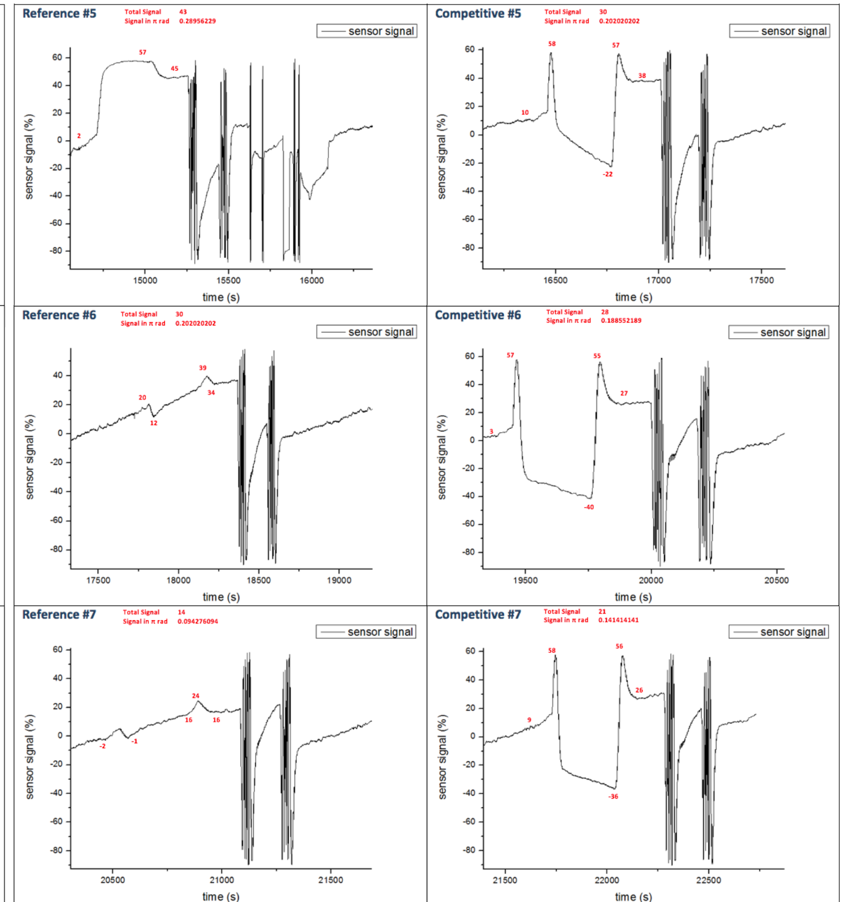
Supplementary Fig.S-1: On chip diaphragm pump geometry



Supplementary Fig.S-1: On chip diaphragm pump geometry. **Fig.S-1 A** shows a dissected segment of the microfluidic module, showing the various critical components, and illustrating their relative size. A dashed line through the pump chamber shows a cut, with **Fig.S-1 B** showing a cross sectional image of this cut surface, illustrating the relative thickness of primary, membrane, and actuation chamber components of the valves used in this module.

Supplementary Fig.S-2: Raw sensor data





Supplementary Fig.S-2: Raw sensor data for reference and competitive assay pairs. sensor signal and extrapolated signal in π rad are shown in red at the top of each graph

REFERENCES

1. K. E. Zinoviev, A. B. González-Guerrero, C. Domínguez and L. M. Lechuga, Journal of Lightwave Technology **29** (13), 1926-1930 (2011).