

# A plug & print platform for SARS-CoV-2 rapid detection on inkjet-printed nanobiosensors with smartphone readout

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Despite inkjet technology made his time for image and text reproduction purposes, it is at its edge in research for the fast, precise and low-cost fabrication of flexible electronics and nanobiosensors with the use of functional nanoinks [1,2].

Current inkjet printers for research are very expensive and require specific skills, as the development of the conductive inks and of the post-print treatments.

Here we propose a simple plug & print platform using only commercially available materials (plastic substrates and silver nanoparticles-based ink) and office equipment for the reliable and scalable production of electrochemical impedimetric nanobiosensors [3, 4].

The printed sensors can be easily functionalized with SARS-CoV-2 spike protein (SP) aptamers and used to detect the virus in saliva samples with a simple and low-cost smartphone readout app.

The SP detection with the aptamers proved to be very specific if compared with the virus nucleoprotein, and with a LOD down to 10 nM.

The main advantage of our method is that it makes possible the spreading of the production instead of the deployment of the sensor, giving the possibility to virtually any research or clinical lab to rapidly print and obtain their own nanobiosensors with a very limited initial expense and a cost per sensor down to few cents.

## REFERENCES

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## FIGURES



**Figure 1:** Inkjet printed impedimetric nanobiosensor for the SARS-CoV-2 SP detection with smartphone readout.