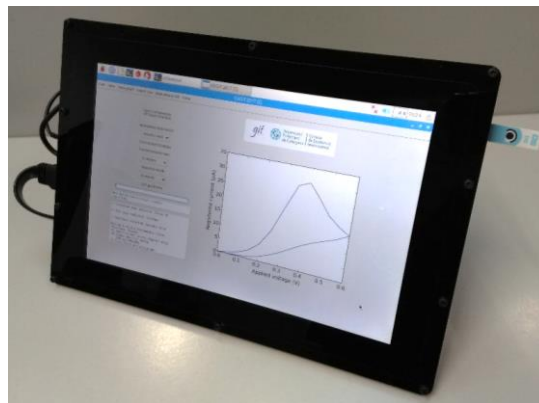


# A COTS-based portable system to conduct accurate substance concentration measurements\*

-I desire measure protein substance concentration and I do not know how to do it?

It is highly advisable to read the article\* before going on.

**How to proceed?**



## Hardware

All links needed to purchase the components are provided in the article.

Connections are indicated in the article, highlighting the next table:

Raspberry Pi	Connection Name	Protocol	LMP91000EVM
19	MOSI	SPI	7
21	MISO	SPI	5
23	SCLK	SPI	3
24	CE0	SPI	1
3	SDA	I <sup>2</sup> C	11
5	SCL	I <sup>2</sup> C	12
9, 14, 6, 39*	GND*	-	2, 4, 8, 10*
2	5V	-	14
1	3.3V	-	13

The pin positions can be identified in the Raspberry Pi documentation, as well as in the LMP91000EVM datasheet. Anyway we provide you hereunder to spare the work of searching.

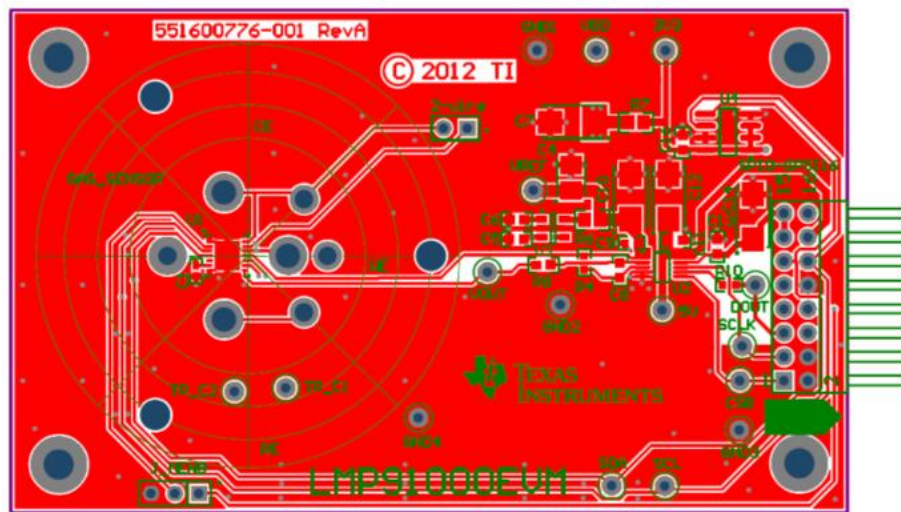
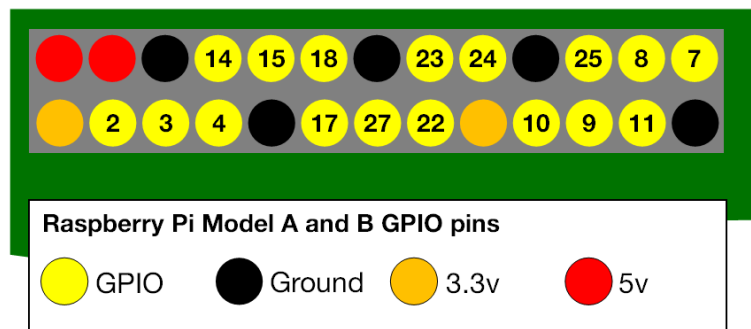


Figure 5: Top Layer Routing

Connections can be realized with standard female-female jumpers, which can be purchased in every electronic shop.

The minor components such as and battery and touchscreen, or optionally a keyboard, mouse and PC monitor, can be any marks and types, sizes, depending upon the application, always that accomplish the requirements of the specifications of the rest of components.

Their connections (HDMI and USB) are indicated in the respective datasheets and do not entail any difficulty.

## Software

1. First steps are to download and install Raspbian, which is the RPi Foundation's official supported operating system. An user guide to have our RPi running is indicated in the RPi web, in the Help section.
2. Once your RPi is properly running, please, download the git repository of the project and copy it on the Desktop of your RPi.
3. Finally, click the provided shortcut to start the electrochemical experience!

## Lab basics

To prepare solutions, you have to bearing in mind the next chemical relationships together with the indicated in the article:

Molarity and Volume:  $MV=M'V'$

Reagents can be purchased online.

A 50µl droplet of the sample is pipetted into the SPE surface. It must cover the entire surface of the 3 electrodes. You have to use a suitable micropipette range (1-100µl). Be careful with the air bubbles that can remains after put the drop.

If you want to measure natural/complex substances, like juices, or vegetables and fruit squeezed, please contact us, it will be a pleasure to indicate you the best way to do that.

Best regards, Authors.

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