

- 1 demonstrator of the cell culturing vessel
- 2 cells growing inside the vessel

CELL CULTURE VESSEL WITH INTEGRATED SENSOR ELECTRONICS

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Problem

Today, evaluation of cell cultures is normally a manual process: The cell culture vessels are taken out of the incubator and put onto a microscope for optical inspection. This change in environmental conditions introduce stress to the cells and can only be executed in large time intervals. How about collecting data about the cell cultures anytime, anywhere in the laboratory?

Approach

Impedance measurements on cell cultures have proved to deliver reliable online data about cell density and vitality. In our cell culturing vessel, an array of electrodes is integrated to the transparent cell culturing surface of the vessel in a printing process. That makes a spacial mapping of the impedance data possible. Other types of sensors can also be integrated.

Technical Data

In a cell culture vessel of SBS-size an array of 7x9 electrode structures, two temperature sensors, measurement electronics and a flash memory have been integrated, still leaving more than 72cm² of cell culturing area. Different electrical or wireless interfaces as well as a battery can be applied.

Advantages

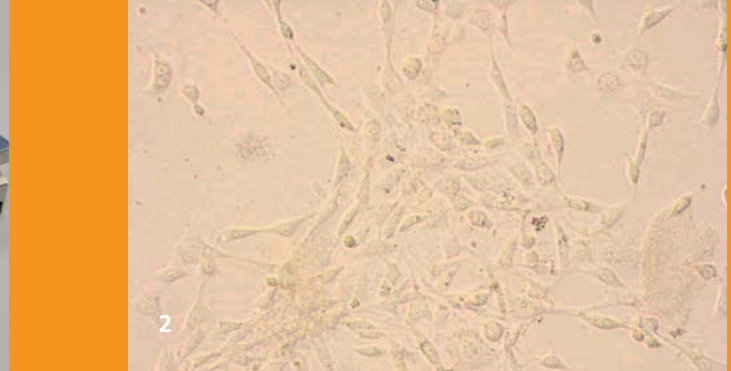
The cell culturing vessel allows online measurement and control during the whole process. Despite the sensors most of the surface stays transparent. Due to standard SBS format, the vessel can be used in many lab automation devices.

Application Examples

Due to flexibility in cultivation modes and sensor technology to be integrated, the vessel is a helpful tool for a variety of tasks. Typical applications are cell culture parameter control and optimization or toxicity assays.



1



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