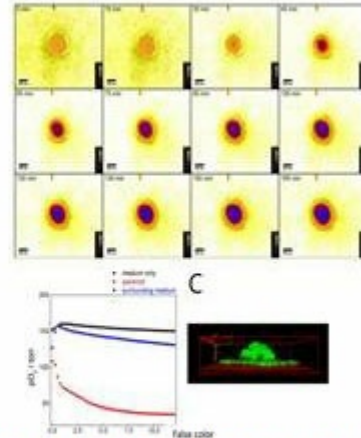




How Much Oxygen Do Your Cells Really Face?

New Live Plugins



Dear Dr. Max Mustermann

You would want to see what oxygen or acidification levels your cells really face during adherent culture? The [modular VisiSens TD imaging system](#) with its new evaluation plugins will then be of real help to you. It enables live analysis of the microenvironment of cells instead of just representing the media status. The plugins allow you e. g. to compare a multitude of regions of interest within one measurement, to directly benchmark your sample with blanks or to investigate different samples in one experiment. Even combinations of different analytes are possible. Besides the essential product information, this newsletter also invites you to read some of our matching [application examples](#).

Any questions to your set-up? Contact your expert [Dr. Robert Meier!](#)

Your PreSens Team

Product Information:

VisiSens TD - The Modular System for O₂, pH and CO₂ Mapping

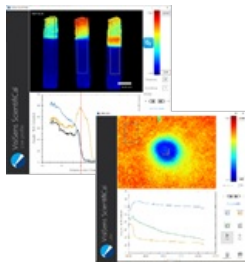
The [VisiSens TD](#) is a modular imaging system that can read out up to three analytes in one system. Planar sensors are placed on the sample area or in different cavities and the fluorescent sensor signals are read out pixel by pixel with a camera. Choose the options that you need for your experiment:

- multiple sensor types combinable in one field of view
- variable sensor and measurement geometry
- 12-bit detector
- adaptable field of view, microscopic, 4 x 4 cm² or up to 30 x 25 cm²
- time-lapse slide shows or recordings



>> [Learn more](#) about the measurement principle of our imaging technology, methods to control and investigate concentration gradients or inhomogeneity, as well as possible set-ups, according to your application.

VisiSens ScientifiCal and VisiSens Plugins



The new VisiSens ScientifiCal software contains a starter pack with several evaluation plugins ranging from

- simple live 2D pseudocolor representation with statistics,
- to live multi ROI (region of interest) evaluation with plotting,
- to live multi gradient profiling,
- as well as a video creator and a raw extractor for further processing of the data in other software.

>> HOW₂ ... Use the Live Plot Plugin for VisiSens ScientifiCal ([video link](#))

Compare different regions of interest (e. g. inner, peripheral and media)

>> HOW₂ ... Use the Live Profile Plugin for VisiSens ScientifiCal ([video link](#))

Gradients over 3D cell culture, spheroids, etc.

Accessories to the VisiSens TD

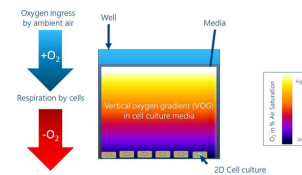
- [VisiSens TD Big Area Imaging Kit](#):
Enables large area imaging & includes excitation lights for O₂, pH and CO₂ imaging
- [VisiSens TD MIC Kit](#):
Optics and an excitation light source to adapt the VisiSens TD Basic System for microscopic oxygen imaging
- [VisiSens TD Mounting Rack](#):
Secure mounting of VisiSens TD Big Area Imaging Kit & quick-lock levers for fast modification of the set-up
- [Imaging Sensor Plate Adapter Tubus](#):
Specifically designed for ISP24 and ISP96 imaging sensor plates due to easy attachment to VisiSens TD Basic Set

Application Examples:

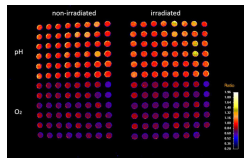
How Much O₂ Do Cells Really Face

Continuous Assessment of Vertical O₂ Gradients in Static Adherent Cell Culture with the VisiSens TM MIOS System

This application note describes a method to continuously measure vertical oxygen gradients (VOGs) non-invasively in cell culture vessels using a cell culture imaging insert called MIOS (Multiwell Insert Optical Sensor) and the VisiSens imaging technique. The results show a significant difference between "assumed" and actual cell culture conditions.



>> [Read more ...](#)



Imaging of pH and pO₂ on Irradiated Fibroblasts and Oral Squamous Carcinoma Cells

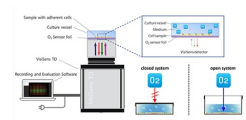
Dual Read-out of pH and pO₂ in 96 Well Plates with VisiSens TD

One of the major challenges in radiation therapy is the interference with tissue repair processes. In this context, chronic wounds show hypoxic characteristics. However, sufficient oxygenation is mandatory for cell proliferation, granulation, migration, as well as protein synthesis during tissue repair. Additionally, pH is particularly important in signaling within damaged tissues and therefore precisely regulated. In this study, we investigated the effects of irradiation on different cell types in *in vitro* cell culture. We used biocompatible pH and O₂ sensor foil equipped 96 well plates along with dual analyte 2D read-out with the VisiSens TD system.

>> [Read the entire application note ...](#)

Oxygen Consumption Rates of Adherent MDCK II Monolayer Cells

A Comparison of Open and Closed Systems Using the VisiSens TD Imaging System

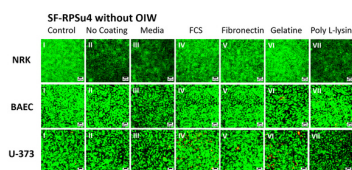


Oxygen is a molecule of utmost importance for biological systems because it is necessary for life but may also induce detrimental damage. Thus, the local O₂ concentration is an important analytical parameter to describe the conditions and metabolic activity of biosystems. The oxygen consumption rate (OCR) of cells and tissues may be used e. g. as surrogate parameter for studying the effects of drugs. In this application note we show how optical O₂ sensors and the VisiSens imaging system can be used to investigate OCR in open and closed vessels.

>> [Read more ...](#)

Adhesive Cell Growth and Microscopy on O₂ and pH Sensor Foils

Impact of Coating on the Adhesion of Cells upon VisiSens Sensor Foils SF-RPSu4 and SF-HP5R



Suspension of Madin-Darby Canine Kidney cells (MDCK-II) were plated on VisiSens™ sensor foils SF-RPSu4 (O₂) and SF-HP5R (pH) that were integrated in regular Petri dishes. Cell adhesion on a regular Petri dish surface, non-coated sensor foils and sensor foils coated with different adhesion promoting substances was determined by staining and microscopic analysis.

After the initial settings were established normal rat kidney cells (NRK), bovine aortic endothelial cells (BAEC) and human glioblastoma cells (U-373 MG) were included in this study. We found that the sensor foils do not have any toxic effect on the different cell lines and that the cells grow well on the sensor foils with no significant difference to regular cell culture substrates.

[>> Read more ...](#)

You would like to learn even more about PreSens Precision Sensing? Please visit our homepage www.presens.de and don't hesitate to contact us. Any feedback will be appreciated.

With kind regards

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Communications



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