

# PyroScience Sensor Solutions

From Deep-Sea to Mars



# Company Profile

- Headquarters in Germany (Aachen) and subsidiary in Austria (Graz)
- Developer and manufacturer of innovative optical sensor solutions
- Several years experience & broad customer base for optical oxygen and pH sensors (from Deep Sea to Mars)
- Strong focus on laboratory and OEM devices
- Innovative & flexible systems supporting research worldwide
- Easy-to-Use (Plug & Play), Ultra-Compact & Cutting-Edge



# PyroScience Analytes



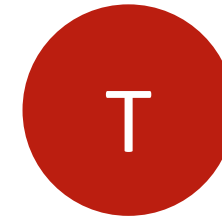
Measurement of:  
**Oxygen partial pressure  $pO_2$**

- Normal range
- Trace range



Measurement of:  
**pH-value**

- pH 4-6
- pH 5-7
- pH 6-8
- pH 7-9



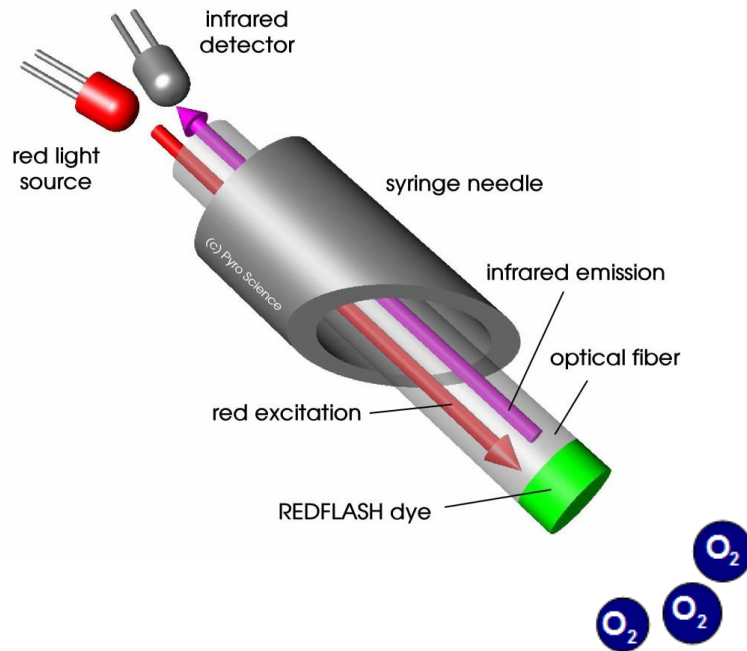
Measurement of:  
**Temperature**

- 0-50°C

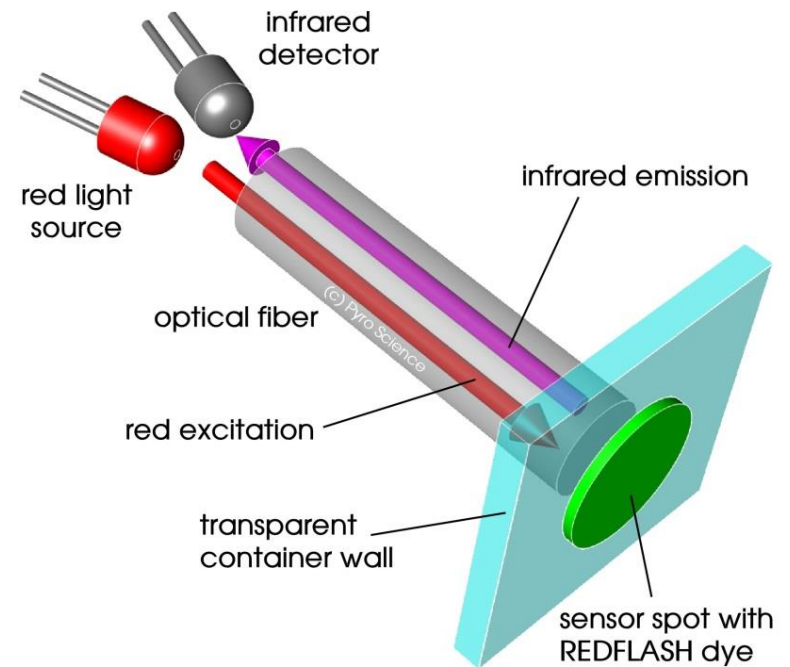


# Optodes: Flexible Sensing Tools

## Fiber-based measurement



## Contactless measurement



# Typical Set-Up

## Read-out Device (Meter)

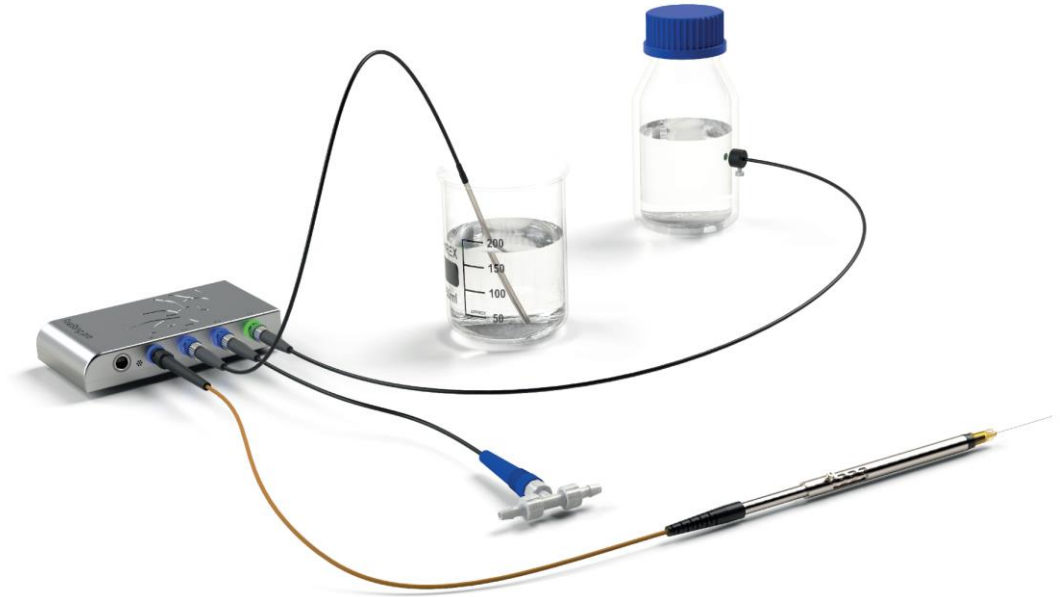
- Consists of the LED, photodiode, filters
- Can also include battery and logger

## Sensor

- Is the actual analyte sensitive part
- Can come in various formats
- From small needle (50 $\mu$ m) to robust sensor caps

## Fiber

- Transports the information (light) from the sensor to the meter
- Different lengths from a few cm to several meters





# Read-out instruments from PyroScience

## Laboratory Devices



FireSting-PRO, FireSting-O2



FireSting-GO2  
Pocket oxygen meter

## OEM Devices



FDO2



PICO-O2, PICO-PH, PICO-T

## Underwater Solutions



AquapHOx®



PICO-O2-SUB, PICO-PH-SUB

# Broad Optical Sensor Portfolio



Robust Probes



Microsensors



Minisensors



Solvent-Resistant Probes



Flow-through Cells



Sensor Spots



# Software – Pyro Workbench & Data Inspector

Pyro Workbench – the new customer-friendly Workbench software

The screenshot shows the PyroScience Workbench V1.2.6.144 interface. At the top, there are menu items: Instrument, Settings, Calibrate, Logging, View, Info. A status bar indicates 'Logging active' with buttons for 'Open log folder' and 'Add comment'. The main area is divided into several sections:

- Setup of devices and sensors:** A table lists sensor channels and their parameters.
- Graph:** A line graph showing data over time for 'A.Ch1.O2 (hPa)' and 'A.Ext.T (°C)'.
- Bottom status bar:** Shows 'Experiment folder: C:\Users\David\Documents\PyroScience Workbench\2021-04-13\_163040' and a timer '0 days 0 hrs 0 min 17 sec'.

Callouts point to the following features:

- Start/ stop logging:** Points to the 'Logging active' indicator.
- Graph menu:** Points to the 'Graph' menu icon.
- Calibration wizard:** Points to the 'Cal' button in the table.
- Play/ pause all sensors:** Points to the green play/pause button in the table.
- Settings wizard:** Points to the gear icon in the table.
- Play/ pause single sensors:** Points to the green play/pause button for a specific channel.
- Settings wizard:** Points to the gear icon in the device setup area.
- Play/ pause device:** Points to the green play/pause button in the device setup area.

Channel	Analyte	Reading	Int.	Comp. Temp.	Sample Interval	Graph	Cal
Ch. 1	Oxygen	206.61 hPa	504	22.2 °C	1.0 s	1	Cal
Ext. T	Temperature	22.25 °C			1.0 s	1	Cal



# In Action: Customer reports (Applications)

- PyroScience sensor solutions have been applied in various applications
  - Lab environment
  - Field trips/in-situ studies
  - From deep-sea to Mars
- Documented on website (Application Fields and Customer Reports)



**Effects of temperature fluctuations on the metabolic rate and aerobic capacity of fish**

University of Glasgow, Scotland (UK)

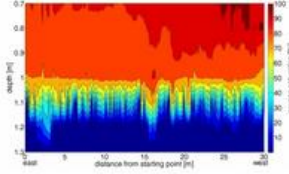
[Learn more](#)



**Measurements of the Oxygen Transfer Rate in an Oak Barrel**

UVaMOX, E.T.S. Ingenierías Agrarias, Universidad de Valladolid, Palencia (Spain)

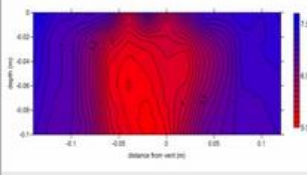
[Learn more](#)



**Acquisition of an Oxygen Transect in a Small Lake**

Institute for Environmental Sciences, University of Koblenz-Landau (Germany)


[Learn more](#)



**pH Changes around a CO<sub>2</sub> Seep using pH Robust Probes in Sediment**

Max Planck Institute for Marine Microbiology, Microsensor Group (Germany)  
Involved scientist: Dirk deBeer

[Learn more](#)



**Photosynthetic Oxygen Evolution**

University of Turku (Finland)  
Involved scientists: Vesa Havurinne & Esa Tyytjärvi

[Learn more](#)



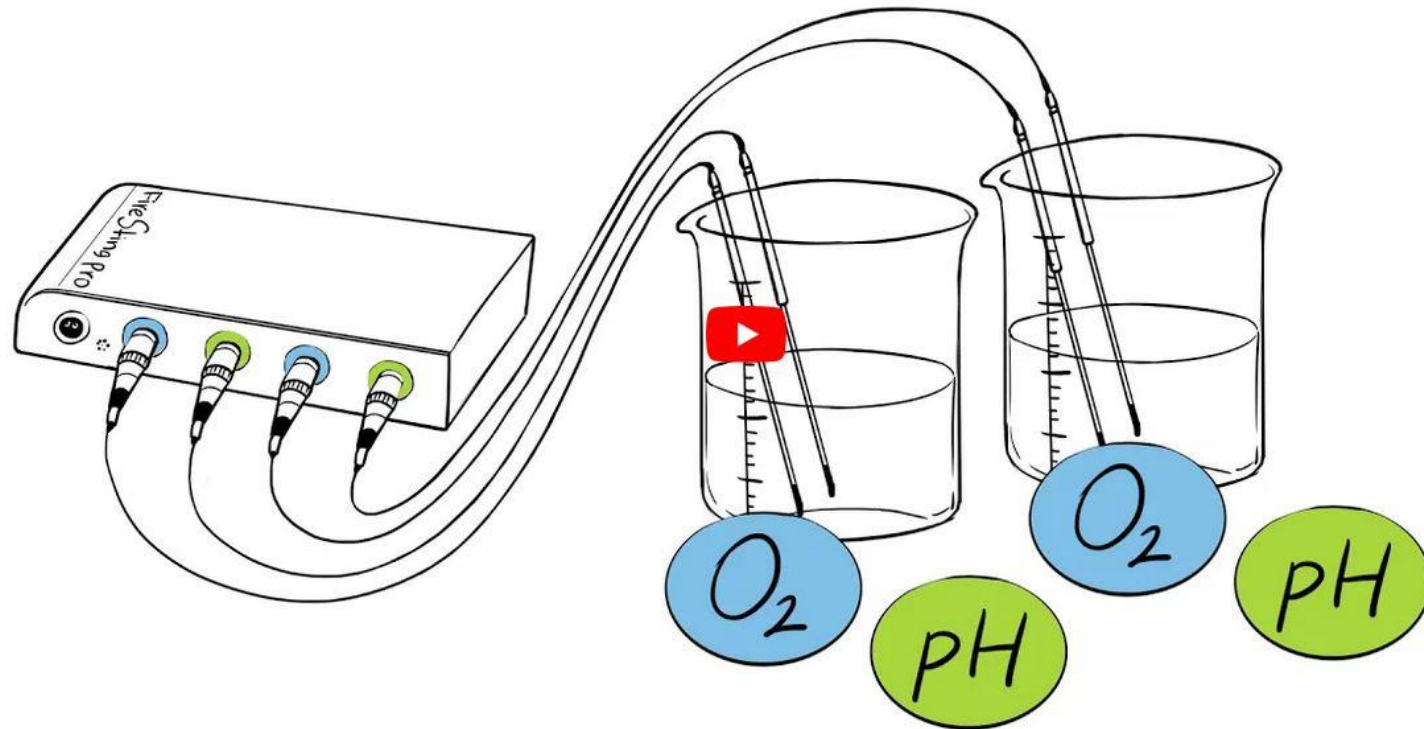
**Continuous pH monitoring of suspension and adherent human cell culture**

Medical University Graz, Core Facility Alternative Biomodels and Preclinical Imaging (Austria)  
Involved scientists: Beate Rinner & Thomas Hebesberger

[Learn more](#)

## Watch on YouTube

[https://youtu.be/va7t\\_J9ju-A](https://youtu.be/va7t_J9ju-A)



Watch on  YouTube

# PyroScience @ BioNanoNet

## Reasons to join BNN?

- BNN is a reliable partner in research projects
- Extensive reach due to high number of members
- BNN is valuable for partner and consortia search
- BNN has the hottest information on EU and national calls

## Expectations

- Exploring new application fields for sensors
- Higher awareness of research labs of our products
- New research projects
- New customers

# Thank you very much for your attention

## Contact

PyroScience GmbH  
Hubertusstraße 35  
52064 Aachen  
Deutschland

Tel.: +49 (0)241 5183 2210  
Fax: +49 (0)241 5183 2299  
info@pyroscience.com  
www.pyroscience.com