

Chemiluminescence Instrument Hardware

Basic Configuration

Designed for applications in industrial research & development, production as well as academia, for the thorough assessment of stability, safety and quality control.

Our equipment is designed based on a modular construction concept. Central is a basic instrument, allowing the actual Chemiluminescence (CL) analysis. Additional needs of our clients can easily be addressed by upgrading with innovative hardware modules. The basic instrument contains all components required for the Chemiluminescence-based analysis.

The core components consist of the precision furnace cell, a highly sensitive light detector and optical components. The embedded computer allows communication with the user interface by TCP/IP protocol.

The furnace cell is a core component of the CL instrumentation, where the activation of the oxidation reaction takes place. The setting of a cylindrical silver container inside a ceramic isolation allows maximal precision in temperature profiles. The preheated reaction atmosphere flows through the oven mass before reaching the sample, ensuring a properly preheated gas temperature. The oven mass is passivated with rhodium, excluding any possibility of oxidation, even while analyzing the most corrosive samples. The light emitted by the Chemiluminescence reaction passes through a heated glass cover to reach the detector. The active heating of the glass cover ensures maximal temperature homogeneity within the furnace cell. It also prevents condensation of volatile sample components. This setup guarantees an extremely precise temperature profile, as well as long term measurements without any formation of residue covering the optical components, which would lead to decrease in sensitivity. The adjustable temperature range extends from room temperature up to 200°C. The ergonomic embedding of the furnace cell within the instrument ensures easy and fatigueless handling of the samples.

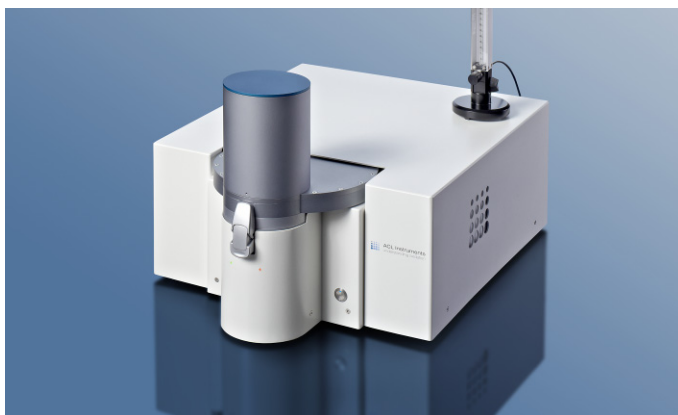
Fig. 1: The basic instrument configuration with the furnace cell (front left hand).

1¹⁰ Configuration

The 1¹⁰ configuration (one channel furnace cell configuration) is designed for state-of-the-art sensitivity. It consists of a passivated silver furnace with radial inflow of the reaction atmosphere. This configuration enables the precise characterization of samples up to a diameter of 22 mm.

Added Values

Increased expectations in stability, safety, quality and warranty require detailed knowledge about the stability of commercial products. Therefore, the precise prognosis of the oxidative profile of a given compound under storage, transport and application conditions is of crucial importance. With our CL-technology, we provide useful and userfriendly tools to understand the following questions: the characterization of oxidation reactions and its kinetics, the assessment of oxidation states (e.g. for quality purposes: quantification of accumulated hydroperoxide concentration) and the crosslinking of organic substances (e.g. 2K-adhesives).



Embedded Software

Our analytical instruments are controlled by an embedded computer. To permit a system- and location-independent access, the user interface is provided through your preferred web browser using TCP/IP communication and Java applets. The control software contains the following functions:

- user authentication (home tab)
- experiment configuration (measurement setup tab)
- realtime survey of previous or currently running experiments (viewer tab)
- data export of previous experiments (file management tab)
- temperature and intensity calibration (calibration tab)

ACL Instruments recommends using the software 'Calisto' (available from AKTS, Switzerland) for the evaluation of exported data in .csv format. However, evaluation is also possible using your preferred software.

Due to your increasing needs, the basic instruments configuration may be easily addressed at any time by upgrading with innovative hardware modules (please refer to the module leaflet).

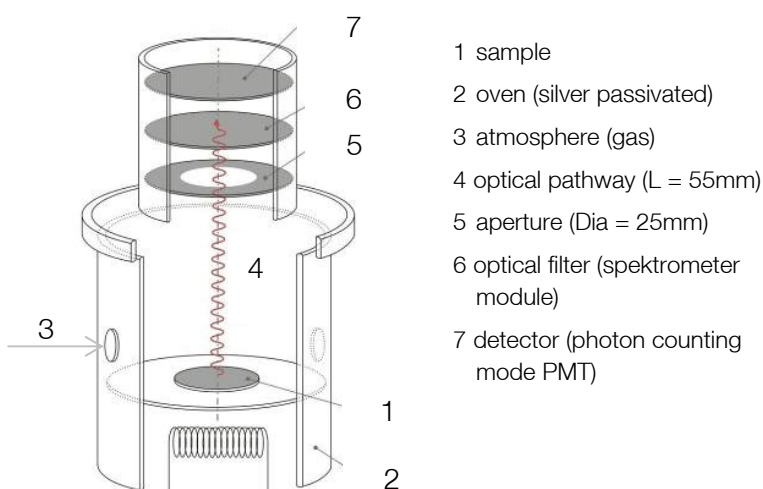


Fig. 2: Schematic view of the instruments setup including the core components.

Extension Modules

Additional needs of our clients can easily be addressed by upgrading with innovative hardware modules; the following products are available (*) or under development (available from 2010°, 2011+°):

- spectrometer module°
- humidifier module°
- uninterruptible power supply°
- Xenon photo-oxidation module+

Please ask for our specific extension module leaflets or contact ACL Instruments Inc.

Tech Data

| | |
|----------------------|---|
| Power supply | 90-264VAC, 47-63Hz, 16A max. |
| Input | 1'000W max. |
| Temperature | 20..200°C |
| Temperature accuracy | ± 0.02K |
| Gas quality: | O ₂ , Air, N ₂ , other on request |
| Gas input pressure | 3 x 10 ⁴ Pa ± 1 x 10 ⁴ Pa |
| Communication | RJ45, TCP/IP-protocol |

embedded web-server

Location and system independent use

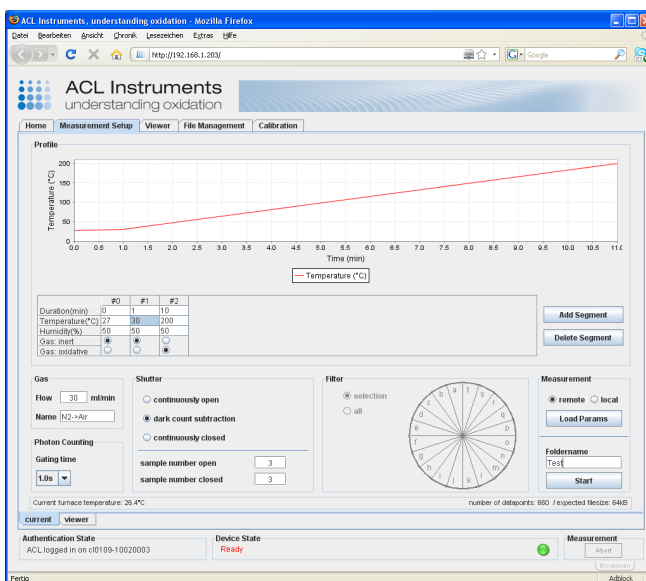


Fig. 3: Screenshot of the viewer tab (software)