



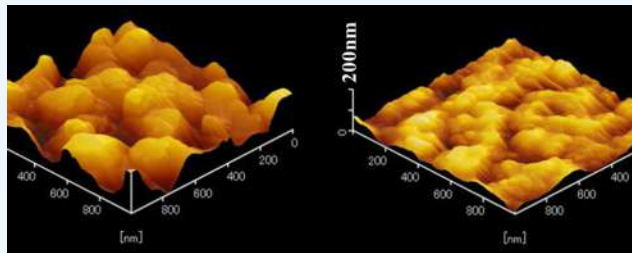
AL2021SCL

CONTINUOUS H₂O₂ MONITOR
FOR LIQUID SAMPLES IN PPB RANGE

AL2021SCL H₂O₂ ANALYZER

A LEAP FORWARD IN UPW TREATMENT

As the semiconductor industry pushes the boundaries of miniaturization and efficiency, the purity of ultra pure water (UPW) used in production becomes increasingly critical. While UV treatment, total organic carbon (TOC) is broken down, which always produces H₂O₂ by recombination of OH radicals. The smaller and thinner the structures on the die, the more susceptible they are to corrosion. Even the lowest concentrations of H₂O₂, in the range of less than 10 µg/L, can corrode the surface of the wafer or the conductive paths (e.g. Cu). This leads to irreversible damage, particularly in processes with ultra thin layers.

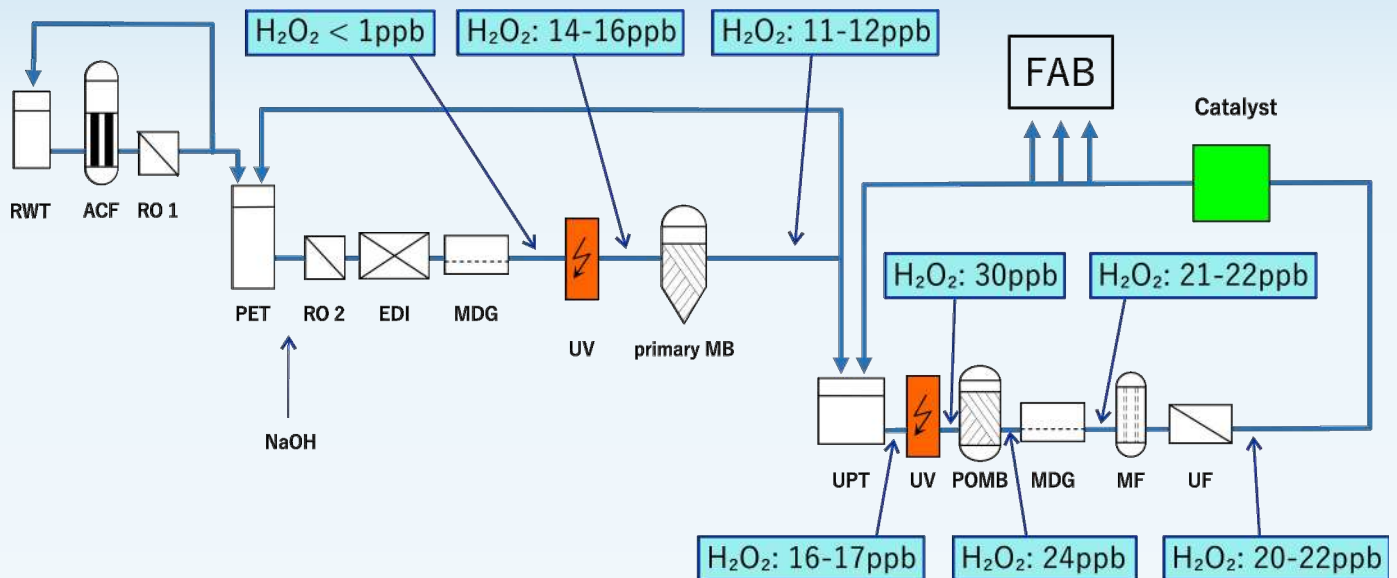


AFM images of a Cu-surface after rinsing with UPW containing H₂O₂ (left) and without H₂O₂ (right)
D. Yano, et al., ECS Transactions, 58 (6) 151-158 (2013)

H₂O₂ is present in higher concentrations at any point of the production line after UV treatment. Without removing it, H₂O₂ will enter the fab and cause serious quality problems. A downstream catalyst can significantly reduce the H₂O₂ concentration in the process water. However, in order to reduce downtime in semiconductor processing, sufficient H₂O₂ reduction and continuous water quality control can only be achieved by on-line monitoring before and after catalyst treatment of the water.



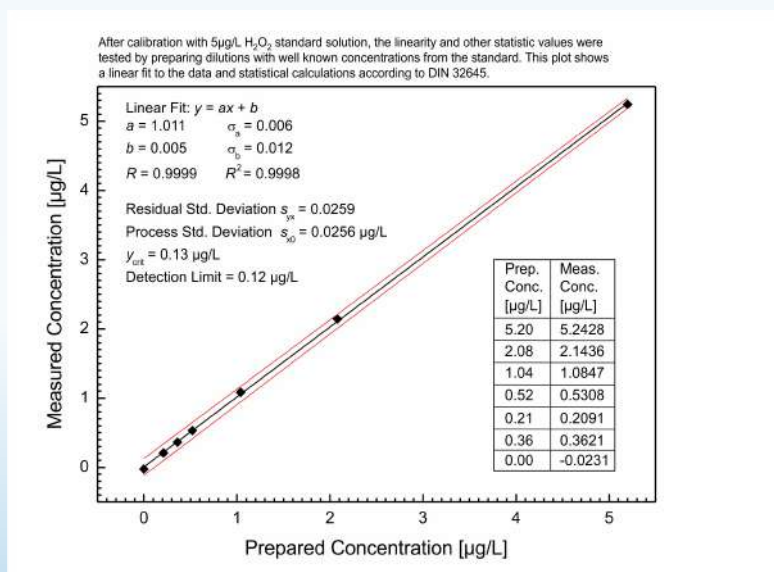
UPW production plant



Scheme of an UPW line with measured H_2O_2 concentrations at different points

Unlock maximum process reliability

In this challenging world of process control and quality assurance, the AL2021SCL emerges as a game-changer. Designed for the specific needs of the UPW industry, this cutting-edge instrument is the only existing instrument that enables the monitoring of H_2O_2 in concentrations down to $0.5\mu g/L$ in water. The AL2021SCL is not only uniquely sensitive, but also highly selective thanks to its detection technique using a peroxidase reaction and fluorimetric detection. Remote control and data storage capabilities ensure that you have access to your data whenever you need it, wherever you are. Its fully automated operation, coupled with automatic calibration, facilitates real-time, high-resolution data capture without the need for constant human intervention.



Linearity of the AL2021SCL H_2O_2 analyzer in the range up to $5\mu g/L$

A catalyst for cost efficient productivity enhancement

Efficiency, productivity and yield are key to successful manufacturing operations. The AL2021SCL facilitates this by offering steady and precise monitoring for improved process management. This leads to an uplift in production capabilities, helping you to fulfill and surpass the expectations of your clients and markets. Moreover, with its low total cost of ownership, the AL2021SCL is a prudent investment that pays dividends in both the short and long term.

Specifications

Detection technique:	Continuous, using enzymatic reaction (peroxidase)
Detection limit:	<100ng/liter eq. $<2 \times 10^{-9}$ molar
Linear range:	100ng/liter - 3mg/liter
Noise:	2% full scale
Time resolution:	~90sec (10/90)
Sample:	Liquid
Calibration:	Automatic, using liquid standard
Intergration:	RS232 and LAN interface, data logging software available
Operation data visualization:	Graphic user interface (7" touch panel) and remote via RS232/LAN
Data storage:	USB drive and internal data backup
Weight and dimensions:	15kg, fit for 19" rack (whd: 45cm x x15cm x 56cm)
Power requirements:	110VAC / 220VAC, <30W

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