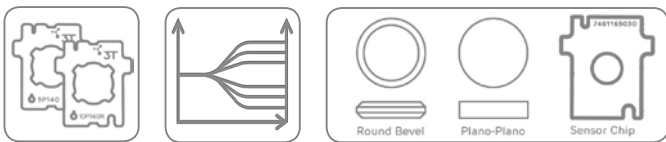


# QCM-D - qCell T Series Features Automated Surface Interaction Analysis



QCM-D overtone measurements with different sensor types at 5 and 10 MHz for a wide range of applications. Customizable level of automation for exact replication of user-defined procedures. Minimal hand-on time in combination with quickly and easily accessible sensors. High data transparency and traceability through digitized and automated logging, sensor ID and database. Convenient and easy experimentation with reproducible and trustful results.



5&10MHz Overtones Different sensor types

## Applications



Proteins



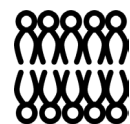
Polymers



Detergents



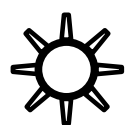
Water



Lipids



Blood



Nanomaterials



Cells



Biofilms



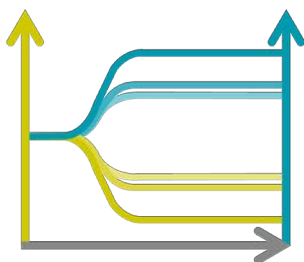
Electrochemistry

[Discover more](#) >

## qCell T features:

### Frequency & Dissipation at Multiple Overtones

qCell T measures molecular adsorption in real time with a sensitivity of a few ng by changes in the resonance frequency and dissipation/damping of a quartz sensor. It provides information on the mass and mechanical properties of the attached sample layer. Probing the sample at multiple harmonics allows for in-depth analyses, including modelling of its viscoelastic properties.

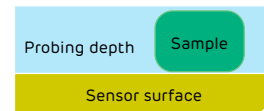
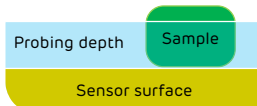


### 5 MHz and 10 MHz sensor compatibility

Harmonics 5 MHz — f1 — f3 — f5 — f7 — f9 —  
 Harmonics 10 MHz — f1 — f3 — f5 —  
 Frequencies (MHz) — 5 — 10 — 15 — 25 — 30 — 35 — 45 — 50 —

5 MHz sensor  
 3<sup>rd</sup> harmonic (15 MHz)  
 Sensitivity 5.9 ng cm<sup>-2</sup> Hz<sup>-1</sup>  
 Probing depth 150 nm

10 MHz sensor  
 1<sup>st</sup> harmonic (10 MHz)  
 Sensitivity 4.3 ng cm<sup>-2</sup> Hz<sup>-1</sup>  
 Probing depth 180 nm



### Variety of sensor types for different applications

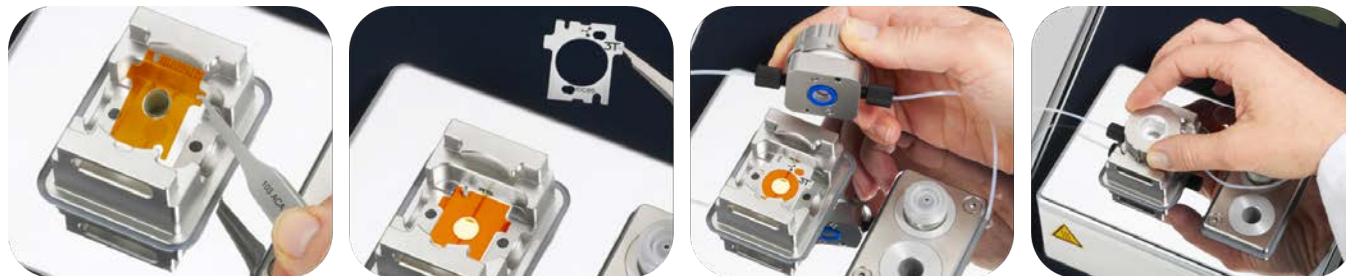


3T analytik's patented quartz-chip offers the most user-friendly sensor handling experience on the market. The user-friendly sensor-handling concept is continued in the elegant sensor positioning adapter system that fits different types of quartz sensors into the flow cell. The loose quartz sensors are suited for harsh cleaning procedures and coating procedures performed ex-situ. Standard gold sensor, other metals, oxides and polymers are available.

The qCell T instruments and flow cells are compatible with 5 MHz and 10 MHz sensors, which enable acquisition at 8 harmonics (overtones) in the 5-50 MHz range. This gives the opportunity to probe the sample at different mass sensitivities and probing depths.



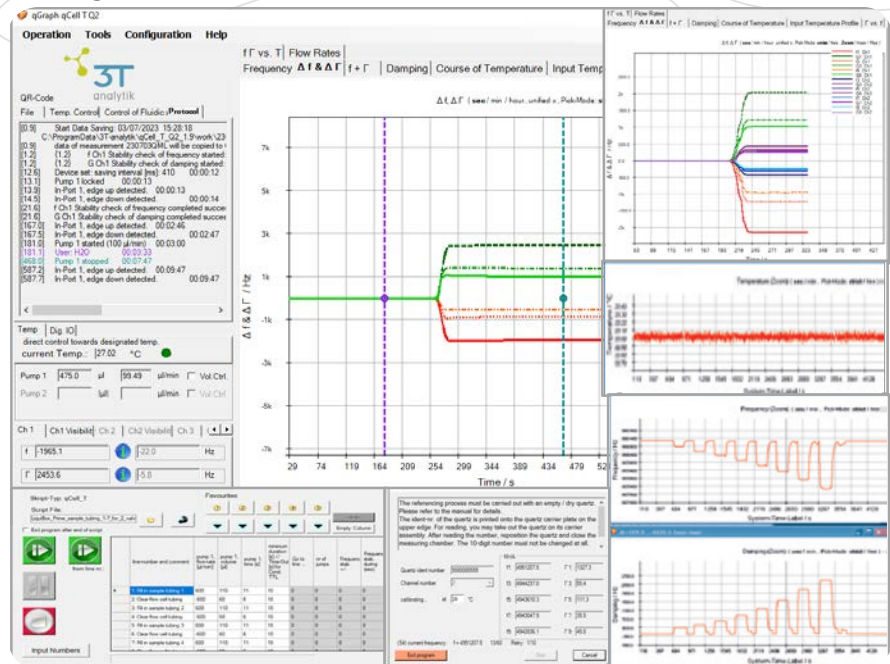
### Practical Flow Cell with Great Performance



The qCell T flow cell is designed for optimum performance and practicality. Only a quarter turn, bayonet style, is needed to remove and insert sensors within seconds. A spring-loaded sealing mechanism minimizes tension-induced variations and signal drifts. The sensor surface is visually observable in any step of the experiment through a window, which allows verifying the absence of bubbles on the sensor surface. Fluidic pathways are made from non-activating polymer surfaces which gives the flow cell outstanding performance with whole blood samples. qCell T is the only QCM instrument that has been used to investigate medical and scientific problems in the field of whole blood analysis.

## Powerful Software and Robust Data Management

The qGraph software records frequency and dissipation, flow rates, temperature and generates a digital log file that documents all actions with a time stamp. A software-embedded database allows the user to search and sort all measurement according to a variety of criteria, e.g.; quartz sensor ID, author, date of measurement and other user-defined entries. Post processing includes functions for aligning and synchronizing data, modules for calculating layer mass, layer thickness, particle size and adsorption kinetics and supports data export to Excel™, Origin™ and other third party software. Importantly, raw data can never be altered which guarantees data integrity!



## Automated and Standardized Measurements

The qCell T comes with an integrated pump control and can be extended with the auto-sampler LiquiBox. This allows a demand-driven degree of automation. The LiquiBox provides sample selection of up to 8 samples per sensor and sample incubation within 4-65°C. The software-embedded script control of sample selection, flow rates, dynamic temperature, stability control, repetitive cycles and more, enables autonomous execution of user-defined procedures (SOPs).



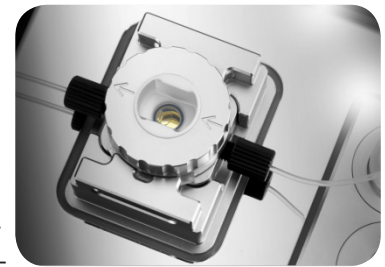
## Patented Chip Design & Sensor ID-Number

The patented quartz-chip offers most user-friendly sensor handling experience on the market. It ensures perfect positioning in the flow cell and minimizes risk of damaging or contaminating the sensor. By the sensor specific ID-number, sensors are instantly recognizable from one another.



## Precise and Dynamic Temperature Control

The flow cell, equipped with a window for visual inspection of the sensor surface during experiments, is mounted on a precision Peltier temperature control block. This design provides temperature stability of  $\pm 0.02^\circ\text{C}$  and a dynamic temperature control range of 4-65°C, which can be extended up to 90°C. Efficient measurements of slow reactions and temperature-induced phase transitions.



## Sophisticated eChem functionality

The qCell T eChem configuration allows QCM-D sensing of electrochemical reactions. The eChem flow cell is designed to establish uniform distribution of electric fields over the sensor surface, facilitating homogenous layer depositions. The implementation of potentiostat control into the software script function allows automated execution of combined QCM-D and electrochemistry experiments. This integration starts from TTL communication to trigger potentiostat procedures to fully implemented time synchronized import and overlaying of electrochemistry data with the QCM-D data.



# qCell T Series

## qCell T Q2 eChem Auto



### Technology ▾



Frequency & Dissipation



Precise Control of Temperature



Ethernet Connection

### Traceability ▾



Sensor Chip with ID



Log file



Local Database

### Productivity ▾



Automated Pump Control



8x Automated Sampling



Dual Channel

### Reliability & Versatility ▾



Script Control



Designed for Electrochemistry



Adaptors for 5&10MHz

## qCell T Q2



### Technology ▾



Overtone Technology for 5&10MHz



Precise Control of Temperature



Ethernet Connection

### Traceability ▾



Sensor Chip with ID



Log file



Local Database

### Productivity ▾



Automated Pump Control



Dual Channel

### Reliability & Versatility ▾



Script Control



Adaptors for 5&10MHz

## qCell T eChem



### Technology ▾



Frequency & Dissipation



Precise Control of Temperature



Ethernet Connection

### Traceability ▾



Sensor Chip with ID



Log file



Local Database

### Productivity ▾



Automated Pump Control

### Reliability & Versatility ▾



Script Control



Designed for Electrochemistry



Adaptors for 5&10MHz

## qCell T



### Technology ▾



Overtone Technology for 5&10MHz



Precise Control of Temperature



Ethernet Connection

### Traceability ▾



Sensor Chip with ID



Log file



Local Database

### Productivity ▾



Automated Pump Control

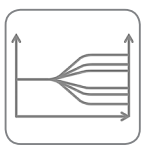
### Reliability & Versatility ▾



Script Control



Adaptors for 5&10MHz



Overtone  
NEW

ALL devices of qCell T series can be upgraded with Overtone Technology

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