

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



The qCell T series is the new fully automated Quartz Crystal Microbalance with Dissipation monitoring (QCM-D) platform. It is equipped with superior liquid handling and in-built script control, empowering establishment of standard measurement procedure. Combined with electronic log filing, sensor serial numbers and local data base, the qCell T series offers unmatched measurement traceability and reliability.



## Applications



Proteins



Polymers



Detergents



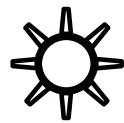
Water



Lipids



Blood



Nanomaterials



Cells



Biofilms



Electrochemistry

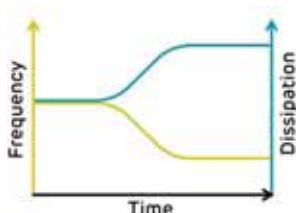
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## qCell T features:

The qCell T series are highly advanced quartz crystal microbalances with damping/dissipation (QCM-D) monitoring. With unmatched signal stability, the devices are optimally suited for real time investigation of nanomaterials, biofilm formation, detergents, cell cultures, assessment of viscosity, or development of immunological, hematological, biological and electrochemical assays.



## Sophisticated Technology

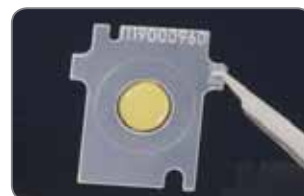


### Frequency & Dissipation/Damping Monitoring with Multichannel QCM-D

As one of the most advanced QCM-D producers in the world, 3T provides instruments that capture both the frequency and dissipation/damping of the oscillation with high resolution in real time. This provides information on the mass as well as the rigidity of the attached layer.

### Patented Chip Design & Innovative Referencing System

The resonant quartz sensor and flow cell are designed for maximum baseline sensitivity. The unique sensor is attached on a sheet with unique serial number. The flow cell locks and seals the QCM-D sensor without asserting any pressure or tension on the quartz, as is not the case with other currently available QCM-D instruments. The unique referencing system captures the initial frequency and dissipation values of every new quartz chip. The values are saved together with the serial number of the chip. Any further changes made either within the flow cell or outside will be recognized by the instrument.



### Precise Temperature & Fully Automated Fluid Control

The flow cell and sample holder are integrated on the same precise Peltier temperature control block. This ensures that there are virtually no temperature differences, eliminating any temperature related frequency drifts and impacts on temperature dependent chemical and biochemical kinetics. Fully automated measurements with sampling and flow control ensure reliability, reproducibility and time efficiency.

## Diverse & Dedicated Applications

### Various Sensor Types and Configurable Device

Besides the standard gold coating, 3T provides a variety of other coatings e.g. other metal coatings,  $\text{SiO}_2$ , hydroxyapatite, different polymers and special organic coatings. Configuration of 3T devices can be provided upon request. Customers can have one channel modified for electrochemistry as well as adding auto-sampling to the base instrument.



### Dedicated to Whole Blood Measurements and Electrochemistry

Due to the flow cell design optimized for whole blood and blood compatible, non-activating fluid contacting polymer surfaces, the qCell T achieves outstanding performance with whole blood samples. The qCell T is the only QCM-D instrument that has been used to investigate medical and scientific problems in the field of whole blood analysis. Furthermore, easy connection to potentiostat enables simultaneous electrochemistry and QCM-D measurements. The special design of electrode establishes uniform distribution of electric field, ensuring homogeneous layer deposition. Additionally, TTL communication allows the device to trigger or be triggered by procedures in potentiostat.



## Easy Handling



### Convenient Operation Control Arranged in Compact and Elegant Instrument Design

3T focuses always on the operational ease and very short time to result. The patented design of the quartz sensor guarantees easy insertion and yet precise positioning of the quartz chip. After simply mounting the flow cell unit, the instrument is ready to measure. The easy control button (ECB) and on board display enable the user to gain quick access and rapid operation of the device without starting PC software. Plus, the device takes less space than a 13 inch laptop.

## Advanced Connectivity

The qCell T utilizes Ethernet connection which can be set up with an IP address. When tied into a network, the unit and data acquisition can be operated remotely which is important for measurements requiring long run times.

## User-friendly & Powerful Software qGraph

### Various Analysis Modules & Easy Data Export

In addition to real time monitoring of frequency and dissipation/damping, qGraph software provides different analysis modules which guide the user quickly through data post-processing e.g. determine adsorbed mass density, thickness of viscoelastic layers, particle size and adsorption kinetics. Export or print data graph by one simple click. Data files can be further processed with Excel™, Origin™ and other processing software.

Sa

Sauerbrey  
Rigid Layers

Ve

Viscoelastic  
Layers

Ki

Kinetics

Dp

Discrete  
Particle



### Automation and Standardization of Experimental Procedures

Automation of measurements is easily achieved by using the embedded software package. The qCell T series comes with a complete software suite for fully automated instrument control. The automatic log file tracks every step of the measurement and can be complemented via online protocol commenting functions. An in-built script function allows the user to program flow rates, source of sample, patterns and repetitive cycles and more. Saving the established protocols ensures the exact replication of user-defined standard operational procedures.

## Superior Data Management through Data Base Function

With a QCM-D platform capable of rapidly generating data, 3T has taken pride in developing a robust and simple approach towards data storage and organisation. The data acquisition software qGraph logs the details of each measurement automatically and ties them to the unique serial number printed on each sensor chip. All measurements are automatically catalogued in a data base, and can be sorted by a variety of conditions, including: sensor serial number, date, author, sample and other user-defined categories.

measid	date	time	author	sample	flow_rate	freq	dissipation	damping	temp	notes
1	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
2	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
3	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
4	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
5	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
6	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
7	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
8	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
9	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
10	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
11	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
12	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
13	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
14	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
15	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
16	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
17	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
18	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
19	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
20	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
21	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
22	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
23	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
24	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
25	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
26	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
27	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
28	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
29	2015-02-20	10:11:04	...	...	...	...	...	...	...	...
30	2015-02-20	10:11:04	...	...	...	...	...	...	...	...



## 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

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