QCM-D–Nanoscale Surface Analysis

Measurement Services – QCM-D E4 Analyzer, Biolin Scientific

Overview

Label-free Measurement of surface processes

The Quartz Crystal Microbalance QCM-D of Q-Sense (Biolin Scientific) enables online and label-free measurements of surface adsorptions or surface-bound processes such as ad- or desorptions, changes of mass and mechanical properties in deposited ultra-thin films.
A planar and specific modified surface is coupled with a quartz crystal vibrating in a defined frequency. If thin layers of molecules are adsorbed from an aqueous solution to the surface, the weight increases and the vibration frequency decreases. From the measured frequency shift the adsorbed mass is calculated. It tracks mass changes by molecule adsorptions in the nanogram scale and can also monitor the viscoelastic properties simultaneously through the Damping(D)-factor of overtones reading (Dissipation see Figure). Continuous data collection gives a real-time presentation of the measurement. A flexible choice of sensor surfaces is available at Q-Sense such as different metals and polymers.

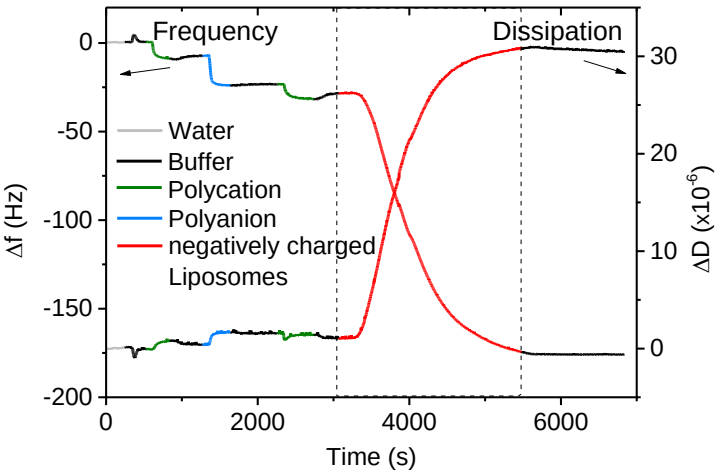
In contrast to optical methods like SPR, WGM or BLI the instrument measures the sum of deposited material and hydrating water which could be in some cases (liposomes) advantageous.

QCM-D is used in applications of bimolecular surface interactions, depositions of thin (LbL) films, characterizing swelling by hydration, and monitoring disintegration of surface coatings.

Key Features:

- Analyzing molecule adsorption from aqueous solution
- Sensitivity in Nanogram scale
- Measure in addition mechanical properties of films
- Measuring not only deposited material (as WGM or SPR) but also hydration
- Useful for studying swelling/shrinking of films
- Independent of refractive index

Photo of QCM-D instrument



Analysis of nanometer thin LbL-coating followed by electrostatic adsorption of liposomes

Prices:

1 sample:	250 €
2 samples:	350 €
4 samples:	500 €
10 samples:	750 €

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