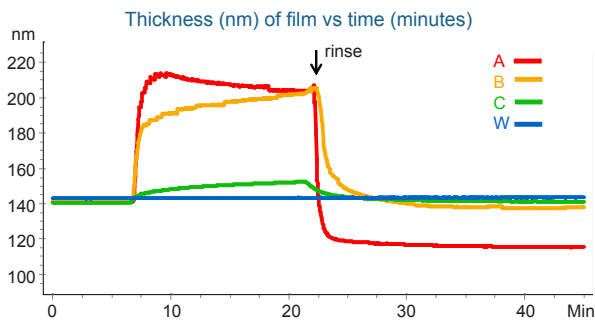


REAL-TIME STUDIES OF DETERGENT EFFECTIVENESS

With the Q-Sense E4 instrument, real-time studies of surface degradation processes are time efficient and easy to conduct. Our technology provides unique insight into the molecular events and structural changes at the surface – watch the break-up of films and mass removal as it happens directly on the screen, and follow swelling phenomena and desorption rates. Instrument flexibility is high, almost any model surface can be analyzed.



1: Stain put on sensor, and detergent added. 2: Detergent penetrates film, swelling occur. 3: Film stain degradation starts.

Here the effectiveness of lipid removal by three commercially available dishwashing soaps is analyzed. To initiate the measurement, model lipid stains were applied onto the four Q-Sense sensor surfaces. Three simultaneous measurements of film degradation at 20° Celsius, using the detergents (A, B and C) in 0.5% dilution, were then carried out and compared to a negative control (water). Through direct analysis of desorption rates, and water coupling, the effectiveness of the detergents could be determined.

The graph shows how thickness of the stains changed during 15 minutes exposure to the detergents and subsequent rinsing with water. The uptake of detergents caused the films to swell, reflecting loosening of film structure. Detergent A, which showed the largest initial swelling, also dissolved the stain most effectively by removing 20% of the material.

THE PRODUCT SOLUTION

To perform the study the Q-Sense E4 instrument was used. The Q-Sense E4 is a complete turn-key QCM-D system. QCM-D is a surface sensitive technique, which provides real-time information on mass and structure of thin films.

- **Measure the mass**

of molecular layers adsorbing or desorbing from the surface, with nanogram sensitivity.

- **Structural changes**

such as softness and density, are measured simultaneously with mass changes, to help identifying detergent behavior.

- **4-Sensor chamber**

allows high throughput and easy reproducibility.

- **Flexible choice of surfaces**

Lipids, metals, polymers, chemically modified surfaces and custom made surfaces are available.

- **Flow or batch measurements**

Your choice - the external flow set-up makes it easy to prepare the sample handling as you prefer.

- **Real-time analysis**

of adsorption, desorption, swelling, molecular interactions and cross-linking occurring on the sensor.

